



# FOOD for Healthful Living

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## Food for Healthful Living



IF THE GIVER OF GOOD GIFTS were to come as he did to Solomon in the Scriptures, or as he did to Midas in the fairy tale, and ask what we wished more than anything else in the world, what would we say? Would we ask for wisdom as Solomon did, or for the ability to turn everything to gold with the touch of one's hand as Midas did? We might, without stopping to think, ask for the touch of gold, but would find as Midas did that something alive, growing, and responsive is much more interesting and precious than something still, cold, and dead, even if it is made of gold. Most of us would probably ask for the power to grow strong, attractive, and capable, and for the chance to have something interesting to do.

We are alive and have the power within us to change or improve. All living things may grow and develop. The tree in the garden may look exactly as it did last year, but it has added a new ring to its girth. We may look to ourselves as we did a month ago, but we may have grown or changed in many ways. It is important for us to make the best of our opportunities for growth and development in strength of body, skill in doing things, acquiring knowledge, learning to appreciate the fine and beautiful, and in learning to live and work with people. All persons, even those who are handicapped, have chances for growth and development. They may continue to get more pleasure out of living and give more pleasure to others.

Every living thing has certain definite needs which must be met if it is to grow and develop to the best advantage. To fail to grow is a sure sign that something is not right. Plants must have water, food, and sunlight. We all must have water, food, sunlight, fresh air, exercise, and rest to grow and develop healthy, strong, attractive bodies.

Each one of us needs to learn all we can about our body, so as to build it and care for it the very best we can. It is the only one we will have to carry us through the great adventure called life. It is our most precious possession. Its building and performance is, to a large extent, in our hands. As Dr. L. Emmett Holt very truthfully said: "It is much easier to form than to reform."

Health, strength, good looks, and accomplishments are a real achievement. We need to keep a picture of the fine, well-developed person before us. The close relationship between health of body and mind cannot be too strongly emphasized. It is the effect of good health upon character which makes the effort to improve the body and its health most worth while.

### SIGNS OF A WELL-BUILT BODY\*

*Expression.*—Alert and happy.

*Eyes.*—Bright and clear, moving normally, no squinting, no dark fatigue rings under them. Membranes of the lids pink and free from inflammation.

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\* Adapted from the bulletin, "Signs of Health in Childhood." American Child Health Association.

*Hair*.—Plentiful, with a luster due to a sufficient natural oil; scalp free from dandruff.

*Skin*.—Clear, soft, smooth, slightly moist. Fat beneath the skin so firm that the skin cannot be raised in deep, thick folds between the fingers.

*Teeth*.—Regular formed and well enameled. Clean and free from cavities.

*Jaws*.—Well formed, broad enough so that the teeth are even.

*Nose*.—Ability to breathe deeply and easily through the nose, with mouth closed, especially when exercising and sleeping.

*Muscles*.—Firm and strong. It is more important that there should be a general muscular development than that certain groups of muscles should be exceptionally developed.

*Head*.—Well formed, with sufficient width of jaw to prevent crowding of teeth.

*Shoulders*.—May be squarely built or slightly sloping, but should not be rounded forward.

*Chest*.—Broad and deep with good expansion.

*Arms and Legs*.—Long bones straight. Joints smooth and strong with well developed ligaments and overlying muscles.

*Knees*.—Not knocked or bowed.

*Ankles*.—Inner and outer sides equally prominent; the inner not thrown out as when the arches of the feet are weak.

*Feet*.—Arches strong and limber. Inner borders straight from heel to tip of great toe. Feet are parallel in standing or walking.

*Weight*.—Suitable to build of skeleton and muscles, height, and age.

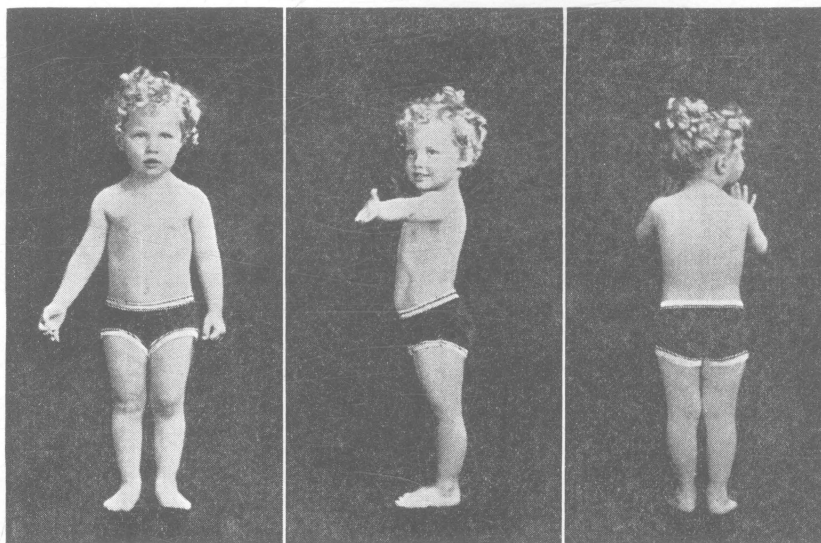


Fig. 1.—Outward signs of health and well developed body in growth.

## SIGNS OF A WELL-WORKING BODY

### *Good Posture.*—

**Body.**—Balanced equally upon the ball and heel of the foot.

**Feet.**—Parallel, great toes pointing forward.

**Abdomen.**—Held flat in its lower part. It may be somewhat rounded where it meets the ribs. After the first two to four years it should not extend farther forward than the chest.

**Spine.**—Normally curves slightly forward at neck, slightly backward at shoulder level, and again slightly forward at the waist line. None of these normal curves are exaggerated if there is good posture.

**Shoulder blades.**—Held flat across the back.

**Head.**—Held erect, chin in and shoulders level.

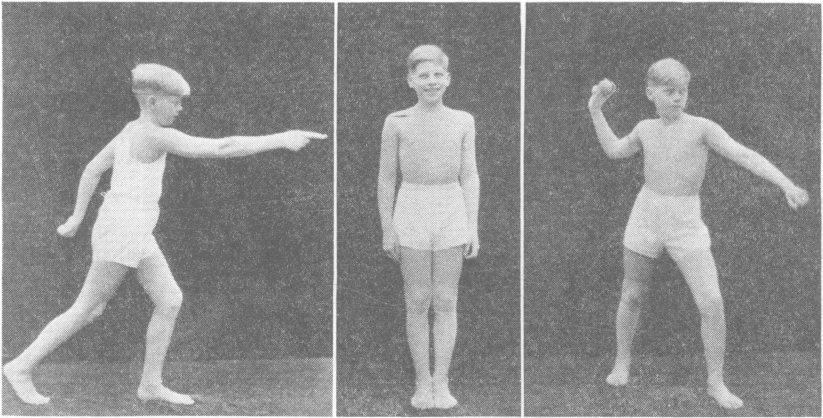


Fig. 2.—A good framework with broad shoulders, a deep chest, and straight legs.

*Bodily Repose.*—Freedom from constant unnecessary activity.

*Prompt, Efficient Muscular Coordination.*—Well-developed muscles which work together like a well-trained team.

*Sleep.*—Quiet and sound.

*Appetite.*—Good.

*Endurance.*—Ability to take part in all ordinary exercise without undue tiredness.

*Breath.*—Sweet.

*Tongue.*—Moist, red, and clean.

*Ability to Relax.*

*Bowel Movements.*—One or more daily at regular times.

## SIGNS OF MENTAL HEALTH

*Activity.*—The urge to do something interesting is a sign of mental health.

Remember, too, that it takes mental ability as well as muscle to play a good game of ball or tennis.

*Imitations.*—The ability to imitate helps the baby to learn to walk—the boy or girl to learn to play games—everyone to get work done and to be like those they admire.

*Suggestibility.*—Be open to suggestions. Indulge in work, reading, and amusement which suggests strength, courage, and virtue. It will influence your thinking and your actions more than you realize. Avoid that which suggests weakness, cowardice, and vice.

*Curiosity.*—We all have a right to have our thirst for knowledge honestly satisfied. Ask the people for information who are interested in you and capable of giving it to you or who will be interested in helping you to get it. Reading may do much to enrich your knowledge.

*Imagination.*—The world would be a dull, drab place without imagination. It helps us to understand people and things. It helps us to invent and accomplish.

*Ability to Learn and Achieve.*—Practice concentrating and thinking a problem through. Finish one undertaking before starting another. Everyone will be surprised how ability to learn and achieve will increase.

*Love of Power.*—Everyone craves recognition and enjoys the thrill he gets from victory. This is fine as long as it does not injure others.

*Emotional Expression and Control.*—Try to increase ability to express helpful emotions like sympathy and affection. Try to control such emotions as jealousy, hatred, and anger.

*Morality.*—Are we interested in thoughtfully and intelligently coming to decisions? Do we have the courage to do what we believe to be right?

#### ATTAINING PHYSICAL AND MENTAL HEALTH

If we fall short of the foregoing picture of physical and mental health, we should seek reliable information and help, and try systematically and persistently to improve.

We Americans love independence. We love to wave our flag which is a sign of it. We are even willing to fight for it, but we must remember that neither we nor anyone else is absolutely independent. If we really achieve physical and mental well being we will have to strive for it and conform to certain regulations. We are even dependent upon the fruit, eggs, milk, butter, and toast we eat for breakfast. We cannot live without so simple a thing as water. We need fresh air and sunlight. We need sufficient sleep; a bath at least three times a week, cleansing of the teeth twice a day, correction of defects if they occur. We need happy associations and interesting things to do.

Let us consider food needs of the body first. Both the kind and amount of food we eat will make a difference. It will make a difference in our size and the quality of our bones, muscles, nerves, and other tissues of our body. It will make a difference in our strength, endurance, and accomplishment. It will make a difference in our appearance. It will even make a difference in our enjoyment and disposition. Foods can do these specific things for us:

1. They can build and repair the tissues of our body.
2. They can furnish energy for our work and play, and can help to keep our body warm.
3. They can regulate processes so that we may grow to the best of our inherited ability, and so that we may feel fine and be strong in resisting disease.

Let us try to group foods according to the needs of the body which they answer: body building, energy giving, body regulating. These are discussed below.

## THE BODY BUILDING FOODS

### BUILDERS OF THE HARD TISSUES: *The Skeleton and the Teeth*

A good framework is very essential. No structure can stand tall, straight, and strong without it. It is the steel framework which makes the skyscraper stand straight and strong. We must build our framework of bone; it is at first rather soft, then as we grow older it gets harder. Bone is marvelous because it is alive, and its cells will go on building and repairing themselves day and night if we furnish them the right material.

Foods which supply calcium and phosphorus are needed to build the bony framework of the body. Those of us who are upstanding and of strong and fine stature are so because we have had sufficient amounts of calcium phosphate deposited in our bones. Those of us who have a good framework have broad shoulders and a deep chest as well as straight legs. We have a chance for greater lung capacity and better digestive organs. We realize the disadvantages of a poor framework when we look at pictures of children and animals which have not had enough building material in the foods they have eaten.

Calcium in ordinary life is known as lime. Limestone and marble, and the lime in plaster and cement, are forms of calcium. "Our teeth are made primarily from lime, the identical mineral from which real pearls are made."

Among foods, milk is the best source of calcium. It also contains phosphorus in the right proportion for building bones and teeth.

Dr. Henry C. Sherman of Columbia University says "For children of all ages, an average intake of not less than one gram of calcium per day . . . is needed to support an optimum rate of storage in the normally growing child." One quart of milk will furnish this amount.

"Carefully controlled experiments . . . lead to the conclusion that one quart of milk per day is the amount required for optimum development of bones and teeth." Dr. Mary Swartz Rose states "Even in the adult diet a liberal amount of milk should be included at all times. At least one pint a day is a good rule, with an increase to a quart as optional but desirable." Contrary to public opinion, milk is not famed for the amount of fat it contains. It is famed

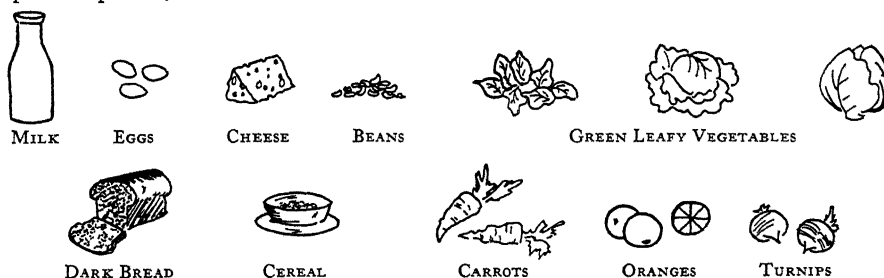


Fig. 3.—Foods that help to build the hard tissues of the body.

for its calcium and phosphorus which build bones and teeth, for its fine muscle building material, for its easily digestible fat, and its vitamins.

Other valuable sources of calcium are vegetables—chard, cauliflower, spinach, cabbage, lettuce; turnips, carrots, dried beans; fruits (especially the orange); the whole grain breads and cereals; eggs and cheese.

Experiments in feeding animals and children have shown that calcium and phosphorus are most successful in building bones and teeth when they are helped by the influence of direct sunlight and by the presence of vitamins (particularly

vitamin D) in the food supply. Vitamin D has been called the bone hardening vitamin. You can make your vitamin D without cost by getting sunlight directly on the skin. In winter you may have to take cod liver oil or other fish oils. They have been called “bottled sunshine” because they are rich in vitamin D. Egg yolks also contain Vitamin D. They seem to be about the only food which naturally contains a goodly supply of this vitamin.

Phosphorus is not so apt to be lacking in our diet as calcium. Many of the foods which

contain calcium also contain phosphorus. The following foods are good sources of phosphorus: milk, eggs, dried legumes, whole cereals, whole grain breads, meats, and nuts. Potatoes, parsnips, spinach, and fresh lima beans are fair sources.

Both calcium and phosphorus are essential. Dr. Sherman says, “In maintaining a favorable condition for growth of bone, calcium and phosphorus are the chief elements which must always be supplied and retained in liberal amounts as actual constituents of the skeletal framework of the body.”\*



Fig. 4.—Interesting a child in using home grown foods.

\* Sherman, Henry C., *Chemistry of Food and Nutrition*, Fifth Edition, p. 489.



## BODY BUILDING FOODS (*Continued*)

BUILDERS OF THE FLESHY PARTS OF THE BODY: *Muscles, Glands, Blood Vessels, Nerves, the Heart, and Other Organs*

Well built muscles are necessary for normal activity, for work and for play. Young people think of the muscles of the arms, legs, and backs as important. They like them hard and firm, for they like to compete in athletic games. Other muscles are important, too. Among the most important are those of the heart. The muscles of the digestive system are also very important. Admiral Byrd said: "A good digestion and a sound heart mean more than anything else to an explorer." Exercise, practice, training, and play will help to strengthen the muscles, but the material that builds muscles and keeps them in good condition must come from food. Let us see what foods can help in this body building.

### PROTEIN FOODS AS BODY BUILDERS

Foods rich in protein are good body builders. They not only bring about growth of tissue, but they also repair worn out tissue. The word protein is interesting—it means of first importance. Proteins are very complex substances.

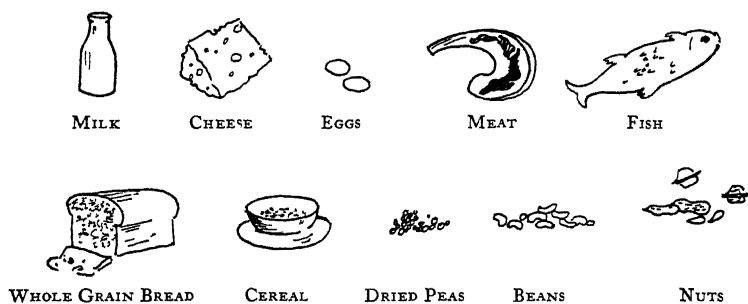


Fig. 5.—A group of body building foods.

Those which are complete contain 22 "building stones." These may be in all sorts of combinations in different foods. Dr. Mary Swartz Rose of Columbia University explains the matter in this way. We might think of the building stones as a "large assortment of beads of 22 kinds, each of a different color and size and many of each kind in the lot. To represent a protein we may select one sample of each of our different beads and arrange a figure; or we may take the same 22 beads, some kinds singly, others by threes or fours, perhaps some by the dozen, and arrange another figure of quite a different pattern. Each would represent a protein made of the same materials, but would be different."\* If a protein only contained 15 or 16 building stones it would be incomplete, and would have to be combined with other proteins containing the ones it lacked in order to be able to build good strong body proteins.

\* Rose, Mary Swartz, Foundations of Nutrition, Third Edition, p. 128.

Proteins which will maintain life and promote growth are called "complete" while those which will not maintain life and support growth are called "incomplete."

Dr. Mary Swartz Rose tells us that we cannot build a body protein containing 22 kinds of building stones from foods in which one or two are completely lacking any more than we can make a dress with cloth but no thread.

Milk, cottage cheese, eggs, chicken and other poultry, meat of all kinds and fish are splendid sources of complete protein.

Whole grain cereals, peas, beans, and all kinds of nuts are also good sources of protein, but the proteins which they contain are not all complete. It is best to eat a variety of these foods and to take some milk, eggs, and meats in addition, or combine milk, eggs, and meat with them.

These good protein foods are not only necessary for the building of strong tissues, but are needed to repair tissues and keep them in a healthy condition. "The fine muscles which these foods can build and keep in repair may be the secret of your poise, your silhouette, and the graceful movement of every step you take."\*

#### MINERAL ELEMENTS AS BODY BUILDING MATERIAL

There are 13 mineral elements which are needed by the body. We depend upon food for all of these just as we do for the protein building stones. Nutrition authorities tell us that if there is plenty of calcium, phosphorus, and iron in the food we eat, we are very likely to have plenty of the other necessary minerals. All these minerals are very important, even those that occur in the body in very small amounts. Phosphorus is necessary for the building of every living cell in the body. Iron is especially needed to build good red blood cells. There are many millions of these cells in the human body; they must carry oxygen, food for growth and repair, and food for energy to every living cell. We know we can get oxygen from the air, but where can we get iron? The ability to secure enough iron depends on several factors. Foods containing iron and copper and probably manganese are essential. Egg yolks, liver, spinach, lettuce (green colored), dried beans, rolled oats, whole wheat, dried fruits, and molasses are excellent sources of iron. Potatoes, onions, oranges, parsnips, maple syrup, peanut butter, and tomatoes are among the food products which are considered fair sources of iron.

Many of the foods which contain iron also contain copper. Whole grain cereals, fruits, vegetables, and meat all contain appreciable amounts of copper. Liver does contain, however, twenty times as much copper as red muscle meat.

It has been found that foods containing vitamins also help the body to use iron. Dr. Rose says: "Iron and copper are essential, but animals deprived of vitamins become anemic, even when iron and copper are both provided."\*\* Whole grain cereals, fruits, vegetables, eggs, and liver will all add to the vitamin content of the diet. (For a fuller discussion of vitamins see p. 16.)

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\* See Yourself as Others See You — Cleveland District Dairy Council.

\*\* Rose, Mary Swartz, Foundations of Nutrition, Third Edition, p. 104.

## WATER AS BODY BUILDING MATERIAL

Altogether about two-thirds of the adult human body is water. Even the bones, which are considered dry tissues, are more than one-third water. The circulation of the blood alone requires 10 pounds of water. No cell will work if it is dry. Most of them must be constantly bathed with water to do their work. A glass of water on rising, one just before or during each meal, one glass in the middle of the morning and one in the middle of the afternoon is a good rule easy to remember and convenient to put into practice.

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## THE ENERGY GIVING FOODS

People are very proud nowadays because of the way they can travel about so comfortably and quickly, and because of the amount of work they can accomplish with the machines they have invented. But if they would but stop and think of their bodies they would realize that they are by far the most wonderful moving machines on earth. So marvelous is the mechanism of the human body that many of the motors in it work day and night from the day of a person's birth to the day of his death, and never stop. Yet if people keep these motors in good order they do not know they are working; they cannot stop them, and they need not regulate them or order them about. These motors have the power to repair themselves.

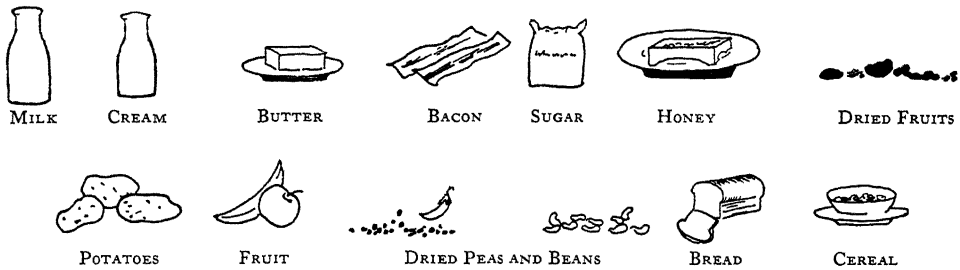


Fig. 6.—Foods that supply energy.

The working principle of all types of engines (those in trucks, automobiles, locomotives, airplanes, even the human body) seems to be the same: give them fuel which they can burn and from it they will generate heat and power—the power to go, and the power to work.

The human machine must continually have fresh supplies of fuel in the form of food. It is food fuel which gives us the power to walk, run, play, and work. Even when we are asleep we need to keep our bodies supplied with fuel to keep the engine going! We do this by eating our three meals a day. We should know, though, which are the best fuel foods to include in our meals.

All foods except water yield some energy, but foods high in starch, sugar, oil, or fat seem to be the best and most economical sources of energy. They can give us power to do the things we want to do each day. We are going concerns, just like the automobile, and spend fuel to keep going. Every time we move we spend some energy.



# Food for Everyday

## VEGETABLES AND FRUITS

- One serving daily of potatoes.
- One serving daily of tomatoes or citrus fruits.
- One serving daily of leafy, green, or yellow vegetables.
- Three to five servings a week of other vegetables.
- One serving daily of fruit.

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## MEATS, FISH, POULTRY, EGGS

**MEATS**—About five times a week; or daily, if prepared in combination with cereals or vegetables.

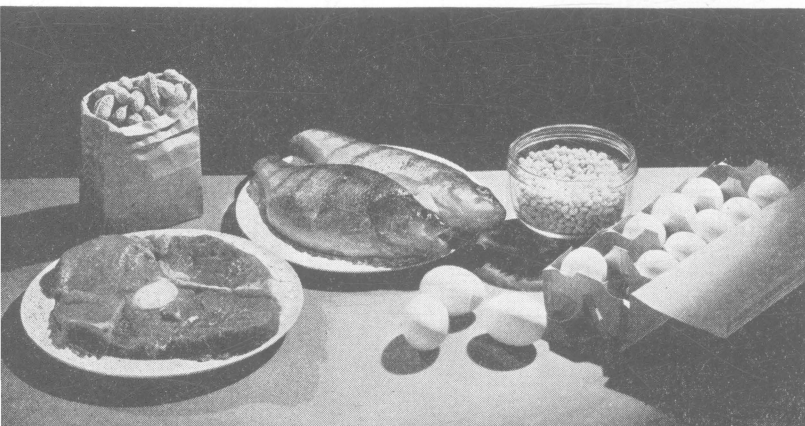
**EGGS**—Two or three times a week for adults; four or five for young children; a few in cooking.



**MILK**—1 quart for each child and for other adults (to drink)

### *Equivalents of 1 quart*

- 17 ounces evaporated milk (a tall can holds 14 ounces)
- 1 quart skim milk and 1 ounce butter.
- 4½ ounces dried whole milk
- 3½ ounces dried skim milk
- 1½ ounces butter
- 5 ounces of American Phosphorus, and



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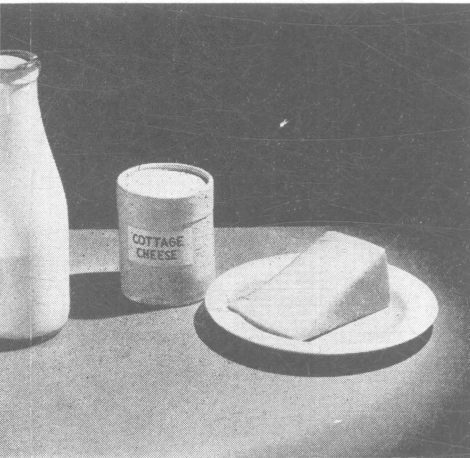


## CEREAL GRAINS

Every meal. In form of bread of any kind, other breadstuffs, crackers, or breakfast foods.

At least one-half as whole grain products.

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and nursing mothers; 1 pint or more to drink or in cooked food).

*1 quart whole milk:*  
Evaporated milk (one  
cans 14½ ounces).  
Whole milk and 1½ ounces

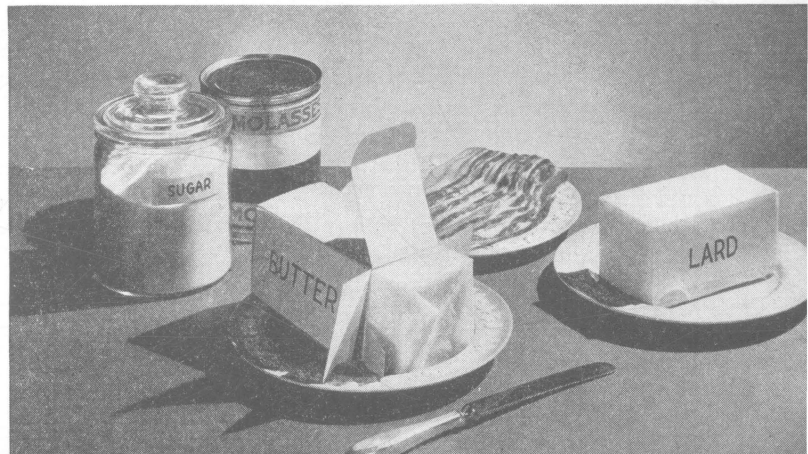
sterilized whole milk.  
Dried skim milk and  
salted butter.

American cheese is  
equivalent in calcium,  
iron, and protein.

## FATS AND SWEETS

FATS—Butter at every meal.  
Other fats for cooking purposes.

SUGAR AND SWEETS—In small  
amounts. About one-half pound  
per person per week as sugar.



Active, growing, young people are apt to eat too little rather than too much energy food, especially in the morning when they need a goodly supply to start them off well and keep them going until noon. About one-third of the malnutrition in growing young people — lack of pep and ability to learn and accomplish things — is due to lack of breakfast or insufficient breakfast.

Dr. L. Emmett Holt said: "To expect an underfed, malnourished child to profit by educational advantages, no matter how superior they may be, is a grievous error. The old saying, 'It is hard for an empty bag to stand upright,' is nowhere more true than here. You cannot fill the head when the stomach is empty; nor can you expect application or concentration of mind or accomplishment from an anemic child who is underweight."

We must eat sufficient quantities of good energy foods containing starch, sugar, or fat if we are to have "pep" and endurance. If sufficient energy yielding foods are not eaten, some of the body building foods may be used by the body for energy. Undernutrition in growing young people is much more serious than in adults, because it interferes with the normal development of the body.

All kinds of cereal foods — breakfast foods, breads of every kind, macaroni, spaghetti, corn products, and tapioca are all high in starch. Potatoes, dried beans, lima beans, and peas are good sources of starch.

All foods which taste sweet contain sugar. Cane sugar, beet sugar, molasses, syrups, and honey are good sources of energy. We must be careful not to eat too much concentrated sugar, however, for it is a very satisfying food and will dull the appetite so that we may not be hungry for the milk, vegetables, fruit, and whole grain cereal foods which are necessary for growth and health. This is the objection to eating candy and sweet foods like ice cream between meals.

One of the best sources of sugar for the body is found in fruits, such as raisins, figs, prunes, bananas, apples, peaches, etc. Sugar, we must remember, is only a one-sided food; it can only furnish energy; it cannot build body tissue. Recent research work would indicate that what our grandmothers used to tell us may be true. Too much sugar may be bad for the teeth. Decayed teeth will spoil good looks. Fruits not only furnish energy but furnish in varying degrees some of the minerals which are most needed to keep the body in good condition. Many fruits are appetite stimulating and act as mild laxatives due to indigestible fiber and laxative substances which they contain. They also furnish vitamins which are valuable in promoting health and growth. Fruits will help to build and keep strong healthy teeth.

And now the fats and oils — where will we find them? There is fat in milk. From this cream we may make butter and cheese. Egg yolks contain fat. Bacon and other fat meats and fish are high in fats. Nuts contain considerable fat; the peanut butter made from peanuts is rich in fat. The oil we use in making salad dressing comes from corn or other vegetable products.

Fats and oils are concentrated forms of energy. We seem to be able to burn starches and sugars a little more easily and in larger quantities. There is an old saying that fats burn best in the fires of carbohydrates (starches and sugars).

It is evident, therefore, that we will need generous supplies not only of good body building foods but energy yielding foods, too, if we are to grow strong and maintain optimum health.

## THE BODY REGULATING FOODS

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The more people can learn and are willing to faithfully put into practice in taking good care of their bodies, the better chance they have for beauty, charm, and interesting living.

“Beauty without is born of health within.” (M. V. O’Shea.) We have talked about how to build a strong framework and firm, healthy muscles, but our task is not finished when that is done. All during the growing years and afterwards our bodies must do their work, and like any complicated machine must be carefully regulated or timed.

### MINERALS AS BODY REGULATORS

But what do we mean by “regulating”? Can we understand what happens in these bodies of ours? Surely some things which happen are well known to all of us. Many of us have cut fingers and seen them bleed, but until we have learned about regulation we do not know that minerals in our bodies clot the blood and stop the bleeding. It is the calcium in the blood which helps it to clot.

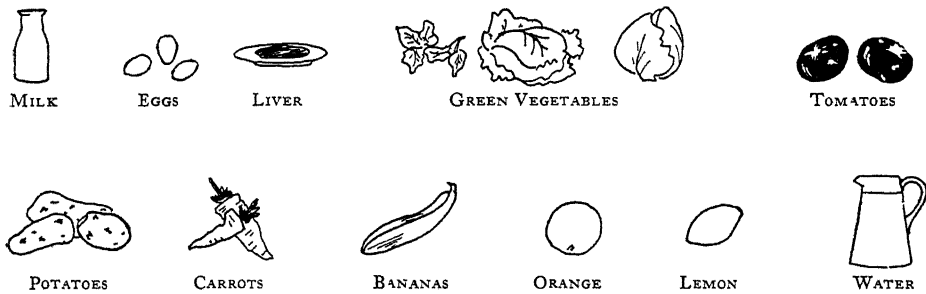


Fig. 7.—A group of body regulating foods.

We are pleased if our blood is a good red color and especially pleased if our cheeks are rosy, for we have heard that red blood cells are rich in iron and efficient in their work.

The Knights of King Arthur’s Round Table protected themselves in battles and sports with coats and coverings of iron from head to foot, but we know today that food iron distributed from head to foot within our body will serve us much better in protecting our health and strength. Growing young people especially need foods high in iron.

A heart taken out of an animal’s body and kept in a liquid containing the right minerals (calcium, sodium, and potassium chloride) will go on beating for some time. Physiology classes are often shown this experiment with the heart of a big frog. This sounds like a fairy tale, but it isn’t. Not only the heart muscles, but all of our muscles, must contract and relax. We couldn’t use our

bodies if they didn't. This action is strongly influenced by the nature of the mineral salts which bathe them.

Minerals are essential for healthy nerves. The nerves must carry messages to the brain, but unless they are healthy, sensitive nerves they cannot do that. Unless the nerves are healthy, boys and girls, young people, and grown-ups are irritable and nervous and cannot sleep well. Healthy nerves help us to keep calm, think through things, act quickly and wisely. To be able to keep calm is a great help throughout life.

Minerals are essential to carrying on all digestive processes. They control the movement of liquids which carry food to every cell and carry waste materials away. Minerals help to keep the fluids of the body neutral, not allowing them to become too acid or too alkaline.

Anemic conditions, constipation, and intestinal food spoilage often go together. The bulkiness and laxative tendency of fruits and vegetables, along with their relatively high iron content, help in preventing these troubles. Fresh fruits and fresh vegetables help in securing a fresh complexion.

Minerals enter into the composition of every living cell, and help them to do their work. We know that phosphorus and iron are indispensable to every working cell.

Nutrition authorities tell us that when there is sufficient calcium, phosphorus, and iron in the diet other essential minerals are not apt to be lacking.

Foods which are good sources of calcium, phosphorus, and iron have been listed earlier in this bulletin (see pages 7 to 10).

#### VITAMINS AS BODY REGULATORS

Vitamins are exceedingly important regulators for people of all ages. They are essential for living as well as for growth. Larger quantities do seem to be necessary, however, in periods of rapid growth. They stimulate growth and they regulate the working of our bodies so that we can be vigorous and healthy, and resist colds and other troublesome diseases. Vitamins as well as minerals are helpful in keeping nerves calm and in preventing nerve diseases. We can do much toward preventing weakness and sickness by eating intelligently. We need to remember what Kate Douglas Wiggin has said:

"To cure is the voice of the past,  
To prevent—the divine whisper of today."

The importance of vitamins in normal nutrition and in preventive medicine is becoming more and more evident each year. The story of the vitamins is not finished, by any means. There will probably be more vitamins discovered. There is certainly much more to learn about those which have been discovered. We do not know as yet the exact chemical nature of all of the vitamins, but we have a fairly good working knowledge of them and their ways.

They are all growth and health promoting, but each one seems to do some specific work for the body. The vitamins may be likened to the elves in Grimm's fairy tale who came each night and mended the little pair of shoes for the shoemaker. They are our unseen helpers. There are six known for the work which they do for us. They have been called vitamins A, B, C, D, E, and G. Let us see what this work is and list the places where these various vitamins may be found.



## Vitamin A

Vitamin A stimulates growth in young people and increases health and vigor at all ages. It seems to increase the ability of the body to resist infectious diseases, especially those of the eyes and respiratory tract. It seems to help in keeping skin, hair, and teeth in good condition.

Vitamin A is one of the vitamins which can be stored in the body. A reserve of this vitamin in the body actively increases our health, vigor, and resistance to disease.

*Sources.* — It is found in the cream of milk, in butter, in cheese, and in egg yolk. The cow and the hen seem to get this vitamin A from the green food which they eat. All green leaves and green-colored foods such as spinach, green lettuce, beet tops, string beans, peas, and green peppers are good sources of vitamin A. All yellow foods — carrots, sweet potatoes, apricots, etc — and also the red tomatoes contains a substance which can be changed to vitamin A by the liver. Liver itself is a good source of vitamin A. Halibut fish oil and cod liver oil are rich in vitamin A. Vitamin A is not destroyed by ordinary cooking processes.

## Vitamin B

The need for vitamin B seems to increase with the rate of growth and with increased activity. It has been called the appetite-stimulating vitamin. If it is lacking in the diet there is loss of appetite; later there seems to be loss of tone of intestinal muscles and constipation. This condition quickly and surely affects growth. The nerves seem to be disturbed; in fact, vitamin B seems to be necessary for the well being and well working of the brain and nervous system.

*Sources.* — The dark breads and cereals made from the whole grains are good sources of vitamin B. It occurs in the germ of the grain.

The richest natural source is yeast. Extracts of yeast and wheat germ have been prepared and are used by physicians to enrich diets with vitamin B.

We should be able to get ample amounts from our foods (see illustrations, pages 12-13). Next to the cereal grains, one of the common sources is the legumes; fresh peas and lima beans are excellent sources. Vegetables such as cabbage, carrots, spinach, lettuce and watercress, are good sources. Tomatoes, cauliflower, kale, beets, greens, onions, potatoes, and parsnips are fair sources.



Fig. 8.—A health champion.

Fruits contain vitamin B, but do not contain quite as much as vegetables. Egg yolks, milk, lean meat, and liver contain appreciable amounts.

The principal foods which do not contain vitamin B are sugar, starch, polished rice, and white flour. We must be careful not to eat so much of these foods that we do not have an appetite for those containing vitamin B.

Vitamin B is fairly stable in cooking.

#### *Vitamin C*

Vitamin C protects man from the disease known as scurvy. You have probably never seen a bad case of scurvy. People with this disease have aching joints, bleeding gums, and loosened teeth. If vitamin C is entirely lacking in the diet, man may develop scurvy in from two to four months.

Vitamin C is also important in normal nutrition. It increases vigor and resistance to infection. It is supposed to give one that "beat-the-world" feeling when he gets up in the morning.

A deficiency of vitamin C which is insufficient to produce scurvy causes ill health accompanied by loss of energy, pains in the joints and muscles, knee jerks, teeth loosening and falling out, spongy swelling in gums, and sallow, muddy skins. Hemorrhages may occur in the skin, muscles, and intestines.

Vitamin C influences growth and has been shown to have an important part in bone and tooth development and may help in preventing tooth decay. It helps to keep the gums healthy.

*Sources.* — The richest sources of vitamin C are tomatoes (raw or canned), oranges, lemons, grapefruit, strawberries, raspberries, and raw cabbage.

Potatoes, while not an excellent source, are important because of the quantity which people eat. There is an old saying, "When the potato crop fails in Ireland there will be scurvy in the spring."

Spinach, lettuce, raw turnips, pineapple, and peas are good sources.

Apples vary greatly with variety, the richest American variety so far studied being the Baldwin. Storage results in considerable loss, most of the vitamin having disappeared after 9 months in an ordinary cellar.

Raw apples, eaten skin and all, contain considerable vitamin C. Cooking destroys much of vitamin C, and the flesh of the apple is lower in this vitamin than the unpared fruit.

Vitamin C is easily killed in cooking, especially in the presence of air. It is more stable in acid foods. Tomatoes and acid fruits such as pineapple and grapefruit are still valuable sources of vitamin C after they have been cooked or canned. Cabbage will lose about 70 per cent of its vitamin C in cooking. Do not add soda in cooking green vegetables; it will increase the vitamin C destruction. Do not use excessive amounts of water in cooking vegetables and fruits. Vitamin C is destroyed in pasteurizing milk. Therefore, growing children must have tomato or orange juice or other foods equal in vitamin C value.

We are unable to store vitamin C to any extent in the body. Therefore, we need to eat some food each day which is known to be a good source of this vitamin.

#### *Vitamin D*

Vitamin D has been called the bone-hardening vitamin because it is necessary for the fixing of calcium and phosphorus in bones and teeth. Unless vitamin

D is present in sufficient amount rickets may develop. The chief outward signs of advanced rickets are deformities of the bones such as bow legs, knock knees, pigeon breast, and enlargement of the ends of the bones. Poor chest and jaw development also result. Early signs are difficult to detect without use of the X-ray.

Regular administration of Vitamin D in sufficient amounts prevents rickets. It may also restore normal bone and tooth growth. It is far better to prevent this trouble than to have to try to cure it. With the regular routine use of some good source of vitamin D, children today seldom show any signs of rickets, certainly not advanced signs.

Vitamin D seems necessary also for health in the grown man or woman. It seems to help in the healing of broken bones and in the prevention of tooth decay.

*Sources.* — The body can manufacture its own vitamin D without cost, if the skin is exposed to the direct rays of sunlight.

Vitamin D is found in very few foods. Cod, halibut, and other fish liver oils are the richest sources. Some fish have enough vitamin D in the fat or oils of their bodies to furnish important amounts (salmon, herring, sardine). Egg yolk ranks next to fish oils. Whole milk, butter fat, and green leaves may contain a little.

Because of the limited distribution of vitamin D in foods, fish oils have come into regular use. Oils of known vitamin D content can be bought. We depend upon them in winter when sunshine is neither so plentiful nor so powerful.

It is the growing boys and girls of our temperate zone who are apt to show lack of vitamin D. Boys and girls in the very cold countries get plenty of it because they eat so much fish and fish oil. Boys and girls in the hot countries get it from much exposure to sunlight.

### *Vitamin G*

Vitamin G promotes growth and is necessary for health and vigor at all ages. It will prevent or cure the nervous disease called pellagra. This disease comes from eating diets composed too largely of corn, molasses, and fat meat, and lacking in milk, eggs, vegetables, lean meat, and whole grains.

“When the diet is poor in vitamin G for any considerable length of time, digestive disturbances, nervous depression, general weakness, and an unhealthy condition of the skin are apt to develop; the incidence of infectious disease is likely to be increased, vitality diminished, life shortened, and the period when life is at its prime greatly curtailed by the early development of the physical condition of old age.”

According to Sherman, milk in its various forms is the most important source of vitamin G in American diets. It would seem that with an allowance of a pint of milk for every adult and a quart for every child, supplemented by generous amounts of fruits and vegetables and some meats and eggs, the intake of vitamin G will be liberal.

*Sources.* — Vitamin G occurs in most foods which contain vitamin B — yeast, liver, egg yolk, milk, cheese, wheat germ, and green leaves are good sources.

### VITAMIN A

What this Vitamin Does for Us	Where this Vitamin May Be Found	Characteristics
<p>Essential for:</p> <ul style="list-style-type: none"> <li>Growth.</li> <li>Good health and vigor at all ages.</li> <li>Successful reproduction.</li> <li>Increases our ability to resist infectious diseases.</li> </ul> <p>Absence causes: Surface coverings in various parts of the body to break down. This may allow bacteria to enter and may result in infection in the eye, in the respiratory tract and elsewhere.</p>	<p>Butter, whole milk, cream, and cheese made from whole milk.</p> <p>Liver and kidney.</p> <p>Cod liver oil, halibut liver oil, salmon, and other fish oils.</p> <p>Usually foods having a yellow or green color. Carrots, sweet potatoes, squash, apricots, spinach, beet tops, string beans, peas, green peppers, green lettuce.</p>	<p>Not readily destroyed by ordinary cooking or canning processes.</p> <p>Since vitamin A is "fat soluble" (that is, dissolved in fats and not in water) it is not lost in the cooking as are some of the water soluble vitamins.</p> <p>It can be stored in the body.</p> <p>More is required by a body of large size and during times of rapid growth.</p>



FISH OILS



BUTTER



LIVER, KIDNEYS



MILK CHEESE



GREEN VEGETABLES



CARROTS



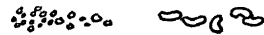
SQUASH APRICOTS

### VITAMIN B

What this Vitamin Does for Us	Where this Vitamin May Be Found	Characteristics
<p>Essential for:</p> <ul style="list-style-type: none"> <li>Growth and good health.</li> <li>Good appetite.</li> <li>Proper functioning of the digestive tract.</li> <li>Healthy bowel movements.</li> <li>Steady, healthy nerves.</li> <li>Successful reproduction and lactation.</li> </ul> <p>Absence causes:</p> <p>Inflammation of the nerves or polyneuritis.</p>	<p>In bran and germ of whole grains.</p> <p>Nuts; dried peas and beans.</p> <p>Green leafy vegetables, tomatoes, cauliflower, carrots, beets, turnips, onions, parsnips.</p> <p>Milk.</p> <p>Liver.</p> <p>Egg yolk.</p>	<p>Ordinary cooking and canning processes do not destroy vitamin B readily, but since vitamin B is soluble in water much of it may be lost if the cooking water or vegetable juice is thrown away.</p> <p>The addition of soda in cooking vegetables increases the destruction of vitamin B.</p> <p>Very little is stored in the body. More is required during times of rapid growth.</p>



WHOLE GRAINS



DRIED PEAS AND BEANS



MILK



NUTS



TOMATOES



CABBAGE



LIVER



EGG YOLK

## VITAMIN C

What this Vitamin Does for Us	Where this Vitamin May Be Found	Characteristics
<p>Essential for:</p> <ul style="list-style-type: none"> <li>Growth.</li> <li>Good health at all ages.</li> <li>Good teeth and healthy gums.</li> <li>Vigor and resistance to infection.</li> </ul> <p>Insufficient amounts may cause:</p> <ul style="list-style-type: none"> <li>Fleeting pains in the joints.</li> </ul> <p>Its absence causes:</p> <ul style="list-style-type: none"> <li>Scurvy.</li> </ul>	<p>Citrus fruits—oranges, lemons, grape-fruit (raw or canned).</p> <p>Tomatoes (raw or canned).</p> <p>Raw cabbage, peppers, spinach.</p> <p>Raw apples, onions, turnips and cooked potatoes may be important sources when cheap, plentiful and eaten in quantity.</p> <p>Peas.</p> <p>Bananas.</p>	<p>Vitamin C is destroyed by exposure to air, long cooking, and addition of soda in cooking.</p> <p>Drying and storing foods tends to destroy it. Canning reduces vitamin C content of fruits and vegetables, except in the case of acid foods such as citrus fruits and tomatoes.</p> <p>Vitamin C is not stored in the body.</p>



CITRUS FRUITS



TOMATOES



PEPPERS



SPINACH



POTATOES



BANANA

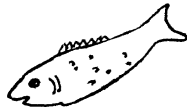


CABBAGE

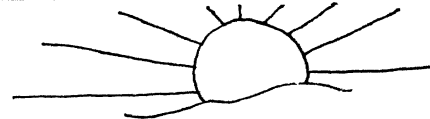
21

## VITAMIN D

What this Vitamin Does for Us	Where this Vitamin May Be Found	Characteristics
<p>Essential for:</p> <ul style="list-style-type: none"> <li>Growth and good health.</li> <li>Good bones and teeth. Vitamin D helps in fixing calcium and phosphorus in bones and teeth and prevents rickets.</li> <li>Vitamin D helps in the healing of broken bones and may help in prevention of tooth decay.</li> </ul> <p>Its absence causes: Rickets.</p>	<p>Cod liver oil, halibut liver oil, salmon, and other fish oils.</p> <p>Egg yolk.</p> <p>Ultra violet rays acting on the skin, either from direct sunlight or special lamps will produce Vitamin D.</p>	<p>Ordinary processes of cooking do not easily destroy Vitamin D.</p>



COD LIVER OIL — OTHER FISH OILS



SUNLIGHT



EGG YOLK

## VITAMIN G

What this Vitamin Does for Us	Where this Vitamin May Be Found	Characteristics
<p>Essential for:                      Growth.                      Good health at all ages.                      Will prevent or cure the nervous disease called pellagra.</p>	<p>Fresh lean meat.                      Liver and kidney.                      Milk, fresh, evaporated and dried.                      Buttermilk.                      Salmon, fresh and canned.                      Eggs.                      Green leaves.                      Tomatoes.                      Yeast.                      Wheat germ.</p>	<p>Ordinary cooking and exposure to air have little effect on vitamin G.                      Use of soda in cooking has a destructive action on vitamin G.</p>



LEAN MEAT



LIVER



MILK



SALMON



EGGS



LEAVES



TOMATOES



YEAST



WHEAT GERM

*“Careful investigation shows that it pays to master the art of selecting an adequate diet. With heredity and all the conditions of environment except food the same, those enjoying the better balanced diet are bound to inherit the earth. The American diet is apt to be deficient in calcium and vitamins. It is probable that a liberal intake of the protective foods, milk, vegetables (particularly the green ones), fruits, and eggs, will furnish the calcium and vitamins A, C, and G, which are all factors in the securing and keeping of a superior condition of nutrition and positive health.”—DR. HENRY C. SHERMAN, “Chemistry of Food and Nutrition.”*

## FOODS TO INCLUDE IN THE DAY'S MEALS

We can plan satisfactory meals if we think of the needs of each member of the family and are well enough acquainted with foods to know those which are able to satisfy these needs. To keep everyone's appetite keen we need to prepare food so that good natural flavor and food value are saved, and we need to have variety both in foods and in the methods of preparing and serving them. Time and labor will be saved and the meals will be better balanced if they are planned for a day or several days at a time rather than just one meal at a time.

An easy way to plan meals is to know what foods should be included, then group them into meals. Encourage the family to eat all wholesome food. There is more safety in a varied diet.

Below are listed foods and amounts to give an adequate diet at moderate cost for the family.

*Milk:* A quart a day for children and for expectant mothers during the last half of pregnancy and during the nursing period. At least a pint daily for all other adults (to drink or in cooked food).

*Vegetables and Fruits:* Four and one-half to five servings per person daily.

One serving daily of potatoes or sweet potatoes.

One serving daily of tomatoes or citrus fruits.

One serving daily of leafy, green, or yellow vegetables.

Three to five servings a week of other vegetables.

One serving daily of fruit.

*Eggs:* Two or three a week for adults; four or five for young children; a few in cooking.

*Meat, Fish, or Poultry:* About five times a week; or daily if prepared in combination with cereals or vegetables.

*A Whole Grain Cereal Dish:* Daily.

*Bread and Butter:* At every meal.

*Sugar and Sweets:* In small amounts.

*Water:* 4 to 6 glasses a day.

## REFERENCES

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Three Meals a Day. Extension Bulletin 133.

Vitamins. Extension Bulletin 54.

The Young Child and His Food. Extension Bulletin 156.

The School Child's Food. Extension Bulletin 111.

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