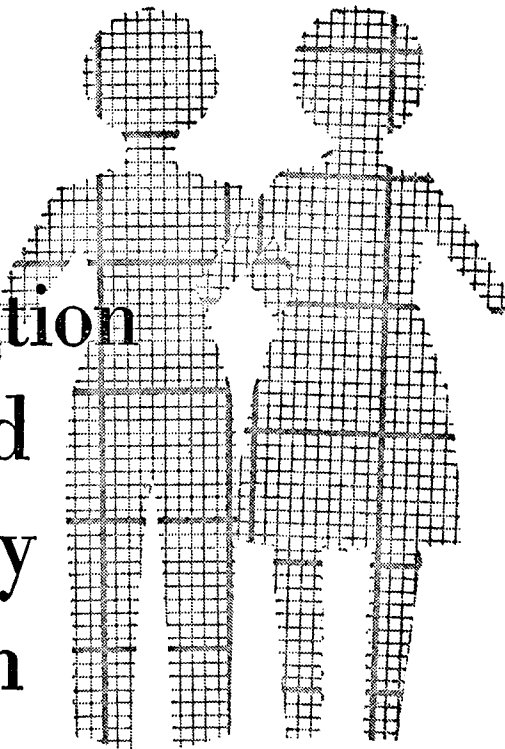


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children's bureau publication no. 352

**Nutrition
and
Healthy
Growth**



**U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
WELFARE ADMINISTRATION
Children's Bureau**

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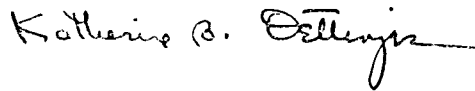
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Foreword

Healthy growth depends more on good nutrition than on any other factor. From the beginnings of growth in the prenatal period to the time when the child attains his full size as an adult, the food that he eats and his ability to convert that food into energy and new body tissues will influence the state of his health not only as a child but throughout life.

At each stage of childhood there are some special hazards to good nutrition. If parents and others who are responsible for the welfare of children know the essentials of good nutrition and are alert to the early signs that something is wrong, they can do a great deal to keep healthy children healthy. A child who is not well nourished should be under the care of a physician. But those who work with parents—teachers, nurses, social workers, and others—are invaluable aides to the physician in improving nutrition. It is to these individuals, rather than to specialists like physicians and nutritionists, that this pamphlet is addressed.

The many friends of the Children's Bureau who have used *The Road to Good Nutrition* over the past decade will realize how much the present pamphlet owes to Dr. Lydia J. Roberts, the principal author of that publication and a pioneer in nutrition work with children.



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Chief, Children's Bureau
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The Well Nourished and the Malnourished Child

CHILDREN differ a great deal in their build and coloring. Some come from families that are naturally stocky, some from families that are naturally rangy. Some have high coloring and others have very little color in their face. Besides these family characteristics, children are naturally fatter at some ages than at others. Some children attain their maximum growth at an early age; others are slow growers. Some fat children may be extremely malnourished and some thin ones may be in perfect health. Good color is hardly ever found in malnourished children but lack of color does not necessarily mean that a child is malnourished. But there are certain "outward and visible signs" that distinguish the well nourished from the poorly nourished child.

The Well Nourished Child

The child who is well nourished and whose emotional needs are satisfied tends to be vigorous and interested in what he does. His eyes are clear and bright, and his expression is usually alert and happy. His general appearance is one of energy and enjoyment of life. The infant shows the same good health by sleeping long and soundly. When awake he lies cooing and gurgling, waving his arms and kicking happily. He cries seldom and then usually because he is hungry, wet, or otherwise uncomfortable.

Digestion. In the well nourished child of any age, the appetite and digestion are good and elimination is regular. But to say that appetite is good does not necessarily mean that a child always eats as much as the adults in the family think he should.

Teeth. The teeth—"baby" teeth as well as permanent ones—are usually well formed and sound. The gums are firm and light pink and hug the teeth closely; there is no tendency to bleeding.

Muscles. If the child has had plenty of the right kind of food and activity, his muscles are well developed. This is shown by their firmness, and by the child's ability to use them in ways appropriate to his age.

Posture. The posture shows adequate development and proper balance of the various muscles. In early childhood the abdomen is usually

somewhat prominent, but after the age of 3 or 4 years it ordinarily does not extend beyond the chest.

Blood and skin. Whatever his natural coloring may be, if a child is well nourished his skin will have the healthy appearance that comes from a good blood supply and will show a ruddy tinge after exercise or outdoor play. The blood will contain the normal amount of hemoglobin and the normal number of red blood cells, as determined by a doctor's tests.

History. Physicians may find it difficult in the course of a single examination to assess the nutritional status of a child who is not obviously well or poorly nourished. A careful history that includes data on the child's customary diet may prove a valuable supplement to the physical appraisal.

The Malnourished Child

The malnourished child is the child who is not getting the proper quantities of the food materials that his body needs. This may be because the food he eats does not supply these materials in sufficient amounts or because his body for some reason is unable to digest and absorb them. As a rule, the malnourished child is small for his age. If he has grown to average height, he is likely to be thin. He lacks the vigor and poise of the well nourished child and his general attitude is one of fatigue. He may be listless and inactive and for this reason be considered lazy, or he may be the overactive, high-strung type, constantly on the go. In either case, he tires easily, lacks endurance, and may be irritable.

General Undernutrition

In this country the most usual consequence of deficient diet is general undernutrition of rather mild degree. As a rule, this is caused by a diet low in a number of essentials, and develops when a child eats one food to excess and so gets little of other foods. Iron, calcium, and other minerals may all be insufficient in amount. Or the diet may furnish insufficient vitamins. The protein may be inadequate in quantity or in quality or in both for the best growth of muscles and other tissues. Or the total amount of food eaten by the child may not be great enough to supply the energy needed for his bodily activities. A chronic disease, or some particular physical defect, may interfere with a child's nutrition. Poor mental health, or simply unhappiness, may also be a factor. Such conditions may prevent a child from eating as much as he should, or may interfere with his ability to utilize what he does eat. These situations usually result in a combination of mild symptoms of the various diseases mentioned below and in a general lack of well-being.

Specific Malnutrition

If there is a continuing deficiency in any of the substances essential to good nutrition, the body organs or tissues needing the largest amount of that material will suffer most. If there is a severe deficiency of any one of the dietary essentials, a specific deficiency disease is likely to result. Some of these diseases still occur among the most poorly fed children in this country although they are much less common than formerly.

If the diet supplies too little of the *iron*, *protein* and other materials needed for building red blood cells, the blood becomes deficient and the child is said to be anemic, or to have nutritional anemia.

If *calcium*, *phosphorus* and *vitamin D* are not supplied in sufficient amounts the bones become malnourished. If this happens to babies or young children, the bones tend to become soft and to bend easily, the disease called rickets may occur, and lasting deformities may result. In older children, a deficiency in calcium, phosphorus and vitamin D will interfere with the normal growth of firm, strong bones.

A shortage of *iodine* in the diet is an important factor in the enlargement of the thyroid gland. The resulting condition is known as goiter.

Long-continued shortage of *vitamin A* results in night blindness, or inability to see in a dim light. An extreme lack of vitamin A may eventually cause a serious eye disease called xerophthalmia.

Inadequacy in the supply of *thiamine* (vitamin B₁) may cause impaired functioning of the digestive and nervous systems, and eventually a disease called beriberi.

Deficiency in *ascorbic acid* (vitamin C) causes a disease known as scurvy. This condition may be mistaken for rheumatism and may occur at any age.

A deficiency of *niacin* (nicotinic acid) causes disturbances of the digestive tract, the nervous system, and the skin, and may ultimately cause a disease called pellagra.

A lack of *riboflavin* (vitamin B₂) may result in a condition known as cheilosis, or "poor man's mouth." It may also cause lesions around the nose and eyes. These conditions are commonly found associated with pellagra.

A deficiency disease has recently been found to be fairly common among extremely undernourished children in certain parts of Africa and other underdeveloped areas of the world. It is known by different names in various countries. The condition is apparently caused by an extreme shortage in first-class protein, such as the protein of milk.

As more is learned about nutritional needs, other specific forms of malnutrition are likely to be identified.

Preventing Versus Treating Dietary Deficiency States

The foods richest in minerals, vitamins, and protein are known as the

protective foods. Prominent among the protective foods are green and yellow vegetables, citrus fruits, milk, lean meat, and whole grain or enriched cereals. For the great majority of children, a well chosen diet contains almost all of the specific nutrients needed for protection against deficiency disease. The exception is vitamin D, which is not naturally present in foods, but may be added to milk. It is only when the physician finds that a child has higher than usual requirements for one or more of these nutrients that he orders vitamins or mineral supplements as a preventive measure. However, once a dietary deficiency has developed, it often cannot be treated by diet alone. As a temporary measure, the doctor may find it necessary to prescribe vitamin and mineral concentrates as a supplement to a good diet.

Overweight a Form of Malnutrition

Children whose weight is consistently well above what is considered the normal maximum for their age and height cannot be considered well nourished. At some stage in their development, many children go through a chubby stage that is no cause for concern. But the child who is truly overweight is not healthy. The initial problem, whatever it is, gives rise to others. The child who is overweight is likely to cut down on his muscular activity because of the extra effort required in moving those extra pounds. Reduced activity in childhood not only tends to make the child get even fatter, it also shuts him off from the full participation in play with others of his own age that is so essential to the development of a happy, healthful personality. A certain proportion of adult obesity, that constitutes a serious health problem in middle life and later, can be traced back to overweight in childhood that no one considered important enough to do anything about. So for both his present and his future well-being, the cause of a child's overweight should be discovered and the condition corrected.

Whose Children Are Poorly Nourished?

Malnourished children are not necessarily children in low-income families, and the children of well-to-do parents are not necessarily well nourished. In general, the children of well-to-do families are better nourished than the children of poor families. They tend to be larger for their age and their teeth are freer from decay. But many families or close to a subsistence income are able to keep their children in good condition by making the best use of the resources they have. And malnutrition is all too common in families that are able to buy whatever they want. At all levels of income, parents need to understand what they are doing, and what they can do, in order to safeguard their children's health through proper food and proper living habits.

The Foods All Children Need

GOOD nutrition means more than the right kinds of food in the right quantities. In order to be well nourished a child must be able to digest and utilize the food that he eats. His ability to do this may be affected by a great many things—the presence or absence of disease, the amount of sleep he is getting, and his emotional or mental condition. These factors must never be overlooked. But specific advice on such problems is outside the scope of this pamphlet. When other things have been taken care of, there is still the question: How much and what kinds of food should a child of a given age have in order to be well nourished?

Each period in the life of a child—infancy, preschool, school, and adolescence—has its special needs and its special problems. But certain principles hold good for all periods. At all periods, a person's nutrition is affected, not only by the food he eats, but also by his rest, his recreation, and his general mental health. At all periods, the diet must provide a number of essential food elements if the body is to function properly.

Children like to eat. If good food is offered in a matter-of-fact way, without urging, most children will accept it and enjoy it. But children, like adults, have food preferences. The best way to get children to eat all kinds of food is to give them some freedom of choice and not to force them to eat against their own will. A child may refuse a certain food one day and accept it a few days later. If children receive a lot of attention when they will not eat, refusing food may become a game with them. The wise parent will say nothing about the matter but will offer the food again some other day. Of course, parents should be concerned if their children steadily refuse to eat many of the foods necessary for good nutrition. But they should tell their worries to the doctor and not show them to the children.

Daily Needs

The food requirements of a child are greater in proportion to his size than those of an adult. An adult's food must supply him with energy and heat, maintain his body processes, and repair his worn-out tissues. A child's food must do all these things and must also build new tissues constantly, as he grows taller and gains weight year by year.

Dietary essentials	What the dietary essentials do for the body
PROTEINS	
Proteins.....	{ Build and repair muscles, glands, blood, and other tissues. { Furnish materials for substances that regulate body processes. { Furnish energy for bodily activities.
MINERAL ELEMENTS	
Calcium.....	Builds and maintains teeth and bones. Constitutes part of muscle and nerve tissue and of body fluids.
Iron.....	Constitutes part of red blood cells which carry oxygen to all parts of body.
Iodine.....	Constitutes part of thyroid gland, which regulates rate at which energy is used by body.
<i>(Phosphorus, copper, magnesium, manganese, potassium, sodium, and other mineral elements are also essential. They are probably present in adequate amounts in diets that supply plenty of calcium, iron, and iodine.)</i>	
VITAMINS	
Vitamin A.....	Is essential to tissues that cover and line body and help it to resist infection. Takes part in adaptation of eye to dim light.
Thiamine (vitamin B ₁).....	} Each takes a specific part in process by which foods are burned in body.
Riboflavin (vitamin B ₂).....	
Niacin (nicotinic acid).....	
Vitamin C (ascorbic acid).....	Is essential to health of teeth, bones, blood vessels, and other tissues.
Vitamin D.....	Helps body to use calcium and phosphorus in food.
<i>(Folic acid, vitamin B₆, vitamin B₁₂, choline and other vitamins are also essential. They are probably present in adequate quantities in diets that supply the above vitamins.)</i>	
CARBOHYDRATES	
Starch.....	} Furnish energy for work.
Sugar.....	
FATS	
Fats and oils.....	{ Furnish energy for work. { Give staying power to meals. { Provide fatty acids essential to health.

A mother who plans the day's meals for her family will want to know what the different foods contribute to the dietary essentials so that she can select with good judgment from whatever is available and get the best value for her food money. The chief contribution of the most familiar foods is given in the Appendix. But it is not necessary to count up the daily amount of each essential included in the diet. Nutritionists have worked out daily food plans showing the quantities of various types of food that will provide enough of each essential. The following is one such plan, which may be used in selecting foods for children of all ages after infancy. If a child gets these foods every day in the amounts specified, the parents can be reasonably sure that his needs are being met. There are other combinations, however, that would be more acceptable to individual children and to most children in some cultural groups. These other combinations can be just as adequate nutritionally as the plan outlined below. If a child eats very differently, however, it is a good idea to ask the doctor or a nutritionist whether his diet is supplying what someone of his age and size should be getting.

One Good Food Plan for Growing Children

Milk. One and one-half pints to one quart.

Vegetables and fruit. At least four or five servings daily, including one leafy green or deep yellow vegetable, and a food rich in vitamin C such as oranges, grapefruit, or tomatoes. Potatoes, other vegetables and fruits.

Eggs. One egg.

Lean meat, fish or other protein-rich food. One or two servings.

Whole-grain or enriched bread. At two or three meals.

Whole-grain, enriched, or restored cereal. At one or two meals.

Fish-liver oil (or some other source of vitamin D). Children under 2 years of age need vitamin D the year round. Older children need it during cold and cloudy seasons until growth is complete. Ask the doctor what form and how much to give.

Iodized salt. (This is needed in inland regions, where sufficient iodine is not available in other forms.)

Additional foods, as needed, to satisfy the child's appetite and to provide energy. The amounts will vary with the age and size of the child. These additional foods should not take the place of the foods already listed in the plan.

The amount of milk specified in this plan meets the child's need for calcium and also supplies protein, vitamin A, thiamine, and riboflavin in generous amounts. The eggs supplement the milk for protein, iron, vitamin A, thiamine, and riboflavin. The fruits and vegetables provide vitamin C, vitamin A, thiamine, riboflavin, niacin, and iron. The whole-grain, restored or enriched cereal and bread contribute some thiamine, riboflavin, niacin, and iron. Vitamin D may be provided by fortified milk or by fish-liver oil, which will also supply liberal amounts of vitamin A.

Altogether, these foods meet the child's need for protein, for most of the minerals and vitamins, and at least half of his need for energy food. Younger children need proportionately more protective foods and less energy foods than their older brothers and sisters. The additional foods that the child eats to satisfy his appetite—cereals and bread, butter and other fats, and sweets—will supply the rest that he needs for energy.

But the mother's task is not done when she has selected the right kinds of food. The nutritive value and the digestibility of foods are affected by cooking processes and other factors. In fact, there is a great deal the mother will want to know if she is to prepare the foods she has bought in such a way that her family will get the greatest possible benefit from them.

Milk

Whole milk (fresh, evaporated, or dried) is best for children, especially for babies. Skim milk (fresh or dried) is equally rich in protein, calcium, and riboflavin, but unlike whole milk contains almost no butterfat or vitamin A. When skim milk is used, butter or fortified margarine and liberal amounts of green or yellow vegetables will be needed to supplement the vitamin A and fat value. When the water that was removed in the manufacturing process has been restored, unsweetened evaporated milk and dried milk have essentially the same nutritive value as the fresh milk from which they were made. Evaporated and dried milk are almost sure to be free from disease germs when they are purchased; fresh whole milk can likewise be free from germs if it has been pasteurized or boiled and then properly refrigerated until it is used. Boil any fresh milk that is given to infants. This applies to milk from the family cow or goat as well as to milk that is bought—even pasteurized milk. It is very important that the milk babies drink should be safe. Moreover, boiled milk is easier for them to digest. Raw milk should never be given to children.

Cottage cheese, cream cheese, and mild American cheese are suitable foods for children. They contain most of the protein of the milk from which they were made, as well as varying amounts of the minerals and vitamins.

Vegetables and Fruits

Vegetables and fruits are valuable chiefly for their minerals and vitamins. Fresh, frozen, or canned vegetables and fruits may be used. Orange juice and mashed ripe bananas are given even to very young babies. After infancy children can eat an ever-increasing variety of ripe fruits, and gradually they can have tender raw vegetables. Among those that can be eaten raw at an early age are cabbage, carrots, lettuce, tomatoes, and turnips or rutabagas, apples, apricots, and peaches. These raw foods must of course be thoroughly washed.

Vegetables and fruits should be prepared so as to retain as much as possible of their minerals and vitamins. Some of these minerals and vitamins are dissolved in the cooking water and are lost if the water is thrown away. There is also some destruction of vitamins when foods are heated, and the longer they are cooked the greater is the loss. The best method of conserving these food values is by steaming or baking, or by boiling for a very short time in a small amount of water. Potatoes should be cooked in their skins. When possible, the cooking water from vegetables should be used in making soups and gravies. Baking soda should not be added to the cooking water because, in the amounts commonly used, it increases the destruction of some vitamins, especially thiamine and vitamin C.

Eggs

Eggs, especially the yolks, are rich in many dietary essentials. Eggs for very young children are best poached, or cooked in their shells. If eggs are scrambled or otherwise cooked in fat, only enough fat should be used to keep the eggs from sticking to the pan, and the heat should be kept low.

Lean Meat and Fish

Tender lean meat, fish, or poultry is needed in the diet, and is usually added in strained or scraped form to children's meals during the first year. Liver is a particularly valuable form of meat. Salt water fish and shell fish are rich in iodine. Meat and fish for children should be cooked so as to be tender and moist, preferably by boiling, roasting, or stewing at a moderate temperature. Highly seasoned meats such as sausage, and smoked or pickled fish are unsuitable for young children.

Among the foods that may serve as substitutes for meat are eggs, milk, cheese, peanut butter, and dried beans or peas. The suitability of these foods varies with the age of the child. For example, dried navy beans or other beans with tough skins, if given to children 3 or 4 years of age, should be mashed through a strainer after cooking. Milk should be served at the same meal because the protein of most beans and peas needs to be supplemented by some protein from animal sources to make it first class nutritionally.

Cereals and Bread

Whole-grain cereals and bread contain all the minerals and vitamins in the grain. Refined cereals and white flour have lost some of their mineral and vitamin values through the removal of the outer layers of the grain in milling. Enriched flour and enriched farina are refined products to which have been added iron, thiamine, riboflavin, and niacin in proportions specified by the Federal Food and Drug Administration. Restored cereals are refined breakfast foods to which thiamine, iron, and niacin have been added in amounts to make them nutritionally equal in those respects to whole-grain cereals. When the nutritive value of white rice is conserved by a special milling process, the product is known as converted rice. White rice fortified with thiamine, niacin, and iron is called enriched rice.

Legislation for the compulsory enrichment of white flour and bread has been passed in more than half of the States. Some southern States have similar legislation for degerminated corn meal and grits. Puerto Rico requires that all the rice offered for sale in the Island be enriched.

With few exceptions the bread, flour, and cereals in the diet of children should be whole-grain, enriched, or restored. Breads that contain enough milk solids to be labeled "milk bread" according to the standards of the United States Food and Drug Administration contribute worthwhile quantities of protein and calcium.

Sweets

Sugar should be used sparingly both because it is likely to take away the appetite for more important foods and because concentrated sweets encourage tooth decay in the great majority of children. Fruits, beverages, and desserts for children should be sweetened only slightly so that the true flavor of the food is still evident. Molasses, sorghum sirup, and dried fruits are the most desirable sweets for children because they also contain a good deal of iron. Molasses and other sirups can be used in making cookies, sometimes in combination with oatmeal or whole wheat.

Fats

The fats that contain vitamin A are the best for growing children. Butter and cream are naturally rich sources of vitamin A; fortified margarine, which makes up almost the entire market supply, has had sufficient vitamin A added in the course of manufacture to make it equal in vitamin A value to average butter. Cod-liver and other fish-liver oils supply not only fat but also iodine and vitamins A and D.

Children get a certain amount of fat in whole milk. Other fats should be used chiefly to spread on bread or to flavor vegetables.

The Prenatal Period

DURING the prenatal period the baby receives his food materials directly from the mother's blood. Everything needed for building his body must come from the food the mother eats. The mother's diet, therefore, should contain everything that both she and the baby need. It should contain enough calcium and protein to meet the mother's normal needs and to build the bones and muscles of the baby. It should contain enough iron for the mother and, in addition, enough to build the baby's blood and to store a reserve supply in his liver for the first few months after birth. It must likewise contain enough vitamins to protect the mother's health and to provide for the increasing needs of the baby.

If the mother's diet does not contain enough of these dietary essentials for both herself and the child, both may suffer. It was once thought that nature protected the baby at the expense of the mother and that the baby would get what it needed no matter how poor the mother's diet might be. But studies have shown that the baby may suffer even though the mother's diet is only moderately deficient. Mothers who do not eat generous supplies of protein before the baby is born may have unhealthy babies and they are more apt to have complications of pregnancy than better nourished mothers.

If the mother's diet has a *calcium* deficiency that is very great or that is continued for very long, especially if the supply of vitamin D is also inadequate, the baby's bones cannot grow normally and he may even develop rickets before he is born. Because a large part of the calcium that the unborn baby receives from his mother enters his body in the months just before birth and because of his rapid growth after birth, a premature baby is especially likely to develop rickets.

If there is not enough *iron* in the mother's diet for the needs of herself and her child, the mother's supply will be used for the child and the mother will become anemic. If the amount of iron is very inadequate the amount stored in the baby's liver, which must see him through the first few months of life, will be smaller than it should be and he also will become anemic at an early age. As with calcium, a large part of the iron that the unborn baby receives from the mother enters his body in the months just before birth, and therefore a baby born prematurely is especially likely to develop anemia.

If the *iodine* supply in the mother's diet is low, her thyroid gland may

become enlarged and she may develop other symptoms of goiter. If the iodine supply is extremely low the baby may also be affected.

How can a mother be sure that she is getting all she needs for herself and the baby? It is not a question of eating large amounts of food, but of eating the right kinds of food. A mother can be sure that her diet is adequate if it includes the following foods every day in the amounts stated:

Milk. One quart during pregnancy and one and one-half quarts while nursing. Part of this can be used in cooking, or eaten as cheese or ice cream.

Vegetables and fruits. Six average servings, including fruit juice. These need not be six different fruits and vegetables. It is important, however, that she eat at least one serving of a green leafy, or a deep-yellow vegetable, and one or two servings of a fruit or vegetable rich in vitamin C.

Whole-grain or enriched bread; whole-grain, enriched, or restored cereals. (These include whole-wheat or enriched white bread, oatmeal, rolled-wheat cereal, enriched farina.) Two or more servings.

Eggs. One egg.

Meat, poultry, fish. Two servings. One may be meat alternate such as cheese.

Butter or fortified margarine. On bread and with cooked foods.

Vitamin D, from fortified milk, fish-liver oil, or other sources.

Water. Six to eight glasses. Part of this can be taken in the form of tea, coffee, and fruit juice.

A source of iodine such as iodized salt. Needed in inland regions.

Additional foods. Only if needed to meet individual demands for energy and to maintain correct weight.

The Infant

ON the average a baby triples his weight during his first year. This rapid growth of muscles, bones, and other tissues can take place only if the baby is getting enough of the right kinds of food. Babies have not had time to store much food in their bodies against periods of possible deprivation and so suffer more than older children if their food requirements are not met day by day. But food alone is not enough. The baby's general health must be good if he is to convert his food into the energy he needs for his activities and into new body tissues.

General Health

A very young child's health is affected by the attitude of people around him more than has been realized in the past. The little baby needs to feel warmth and affection and love, and the mother should take time to laugh and play with him while she is bathing or dressing or feeding him.

The young baby is also very susceptible to communicable disease. He should be examined by a doctor regularly, perhaps as often as once a month, and given whatever immunizations the doctor advises. The baby should be kept away from anyone who is ill. A person who has "only a cold" or "just a cough" may give a baby an infection that is much more serious.

Diarrhea and other infections of the digestive tract that were once so common in babies have now been reduced through community action that safeguards the milk and water supplies. But the mother must continue to see that all food is safe when it is fed to the baby. The chances that a baby will acquire a communicable disease from his food are reduced by breast feeding and, after weaning, by boiling his water and preparing his formula by an approved method.

Daily Routines

Most adults have learned from experience that they are healthier and happier and that they tire less easily when their lives are regular. What is true for adults is even more true for children. Irregularity makes for discomfort and nervous strain. A daily program is a great convenience for the entire family, but it should be a guide and not a hard and fast requirement.

Babies differ in the amount of sleep they need, but every baby should have the opportunity to sleep as much as he wants to. The very young baby will sleep a great deal of the time. His need for sleep gradually decreases, but at the end of the first year he will still require about 12 hours each night, as well as daytime naps. A baby should never be awakened from sleep to be shown to visitors.

Sunshine helps a baby to grow normally. When the weather permits, his sun bath should be taken out of doors.

The baby should have plenty of opportunity for exercising his growing muscles. Ordinarily a baby exercises constantly when he is awake by kicking, tossing his arms about, stretching, and later by learning to creep. These movements should not be restricted by tight clothing or bed clothes. The parents should talk to the baby and play with him, but the play should not overexcite him. Especially in the late afternoon, play should be quiet and gentle or the baby may be stimulated too much and his night's rest may be disturbed.

After the first few weeks a baby usually wants his food at fairly regular times, and so a schedule for his meals can be planned. However, there are times when he may be hungry before the usual feeding time, or may not be hungry until afterward. The mother must be able to recognize these times and respect them. The baby knows when he wants food better than she does.

A daily program should be planned for the baby that is in harmony with other family arrangements. But whatever plan is set up, one must expect to make exceptions to meet special situations. A sample daily program for a very young baby is as follows:

- Early morning Breast or bottle feeding.
Sleep or play alone in crib.
- Midmorning Fish-liver oil or other source of vitamin D, and
orange juice. Bath.
Undress the baby in time to allow for exercise and
play before bath.
- Late morning Breast or bottle feeding.
Nap (out of doors if weather permits).
Drink of water after nap. Put baby where he can
play safely. Sun bath if weather permits. (In
very hot weather give sun bath before morning
bath or after afternoon nap.)
- Midafternoon Breast or bottle feeding.
Nap (out of doors if weather permits).
Orange juice, when baby wakens from nap. Put
baby where he can play safely.
Offer water at some time during afternoon.

- Late afternoon Prepare for night. Allow time for exercise and play.
- Early evening Breast or bottle feeding.
Bed, lights out, windows adjusted for night, door shut.
- Late evening Breast or bottle feeding.
If baby does not waken, this feeding may be omitted.
- In the night Many young babies waken for another feeding about 2 or 3 in the morning, but before the end of the second month most babies will sleep through the night.
Some babies give up this feeding soon after birth.

Breast Feeding

Most doctors believe that breast feeding is better than any other form of feeding for the small baby. They believe that even a short period of breast feeding helps to get the baby off to a good start because it is during these earliest weeks of rapid growth that digestive disturbances are most serious. Most mothers can nurse their babies if they wish to. Some women allow themselves to be discouraged too easily. The mother should keep on putting the baby to the breast when he is hungry, even though the milk does not come at once. A powerful stimulus to milk secretion is the sucking of a vigorous, hungry infant and it will probably come in sufficient quantities in a short time. If, after a few days, the milk is not yet sufficient, the doctor may prescribe supplementary bottle feedings.

When a baby is breast fed he is still dependent on his mother's food. If she is to produce enough milk for the baby without depleting her own body stores, she must eat the proper foods. At this time she needs almost the same diet that she will have grown accustomed to during her pregnancy. The nursing mother should increase the daily diet recommended for the pregnant woman by adding: another pint of milk, an extra serving or two of vegetables or fruit, and a second serving of meat or other protein-rich food.

Bottle Feeding

The baby that is bottle fed from the beginning and the breast-fed baby when he is weaned, especially need to be under the supervision of a doctor who will prescribe the proper feedings for them. The most important problems connected with bottle feeding are: (1) having a safe milk supply; (2) planning the milk mixture so that it will be adequate in quality and quantity; (3) preparing the milk mixture so that it will be safe and digestible; and (4) safeguarding the baby's sense of security and warm human contact.

Clean fresh milk that has been pasteurized, unsweetened evaporated milk, or dried milk are all satisfactory types of milk for babies. Cow's milk is used most commonly but some families prefer goat's milk. The doctor should decide upon the ingredients of the feeding and upon the amounts to be given to the baby. If raw milk is used it must certainly be boiled. However, it is the consensus of opinion among child specialists today that any fresh milk mixture fed to a baby should be boiled to render it absolutely safe. At the same time, this renders it more digestible. If evaporated milk is used it need not be boiled as it has already been made safe and digestible by the process of manufacture.

Additional Foods

Whether the baby is breast fed or bottle fed, other foods besides milk should be added to the diet during the first year to provide the essentials that milk—even breast milk—does not supply in adequate amounts. Orange juice (or other good source of vitamin C) and fish-liver oil (or other good source of vitamin D) are usually prescribed at the end of the second week of life. Then, one by one, at different times during the year, whole-grain or enriched cereals, egg yolk, green and yellow vegetables, fruits, meats, potatoes, and whole-grain or enriched bread are added to the diet. It is up to the doctor to decide the order in which these foods are offered.

Starting with cereals that have little or no fiber or that have been strained, babies gradually learn to eat cereals that are thoroughly cooked but not strained. As soon as a baby has teeth he should be given a crust of dry bread to bite. Babies become accustomed to fruits and vegetables by tasting the juices; next they are given the sieved pulp, and just as soon as they can chew they progress to the mashed or chopped form. This change from sieved food should not be put off too long. If it is postponed until the child is 12 or 18 months old, he may have become so accustomed to soft foods that it will be difficult to get him to eat more solid kinds. Most babies can eat mashed ripe bananas and scraped apple very early. Egg yolk is given early in infancy because it contains the iron which a young baby needs. However, egg does not agree with all children and only a small amount should be offered at first, until the mother is sure that her baby does not react unfavorably to it. When a child is about a year old he can, as a rule, take whole egg every day, either served as a main dish or combined with milk in a simple dessert. Meat should be free from fiber at first; later it merely needs to be chopped or cut fine.

These changes in the baby's diet should be made gradually as he is ready for them. New food should be given at first in small amounts so that the child may become used to the new flavors and textures. Those that are accepted should be given again very soon so that they can

become familiar. A food that is rejected should also be offered again after a few days. Remember that a dislike for a certain food may last only a few days and nothing is to be gained by forcing the child to eat what he does not want. Some dislikes may persist; these should be respected as long as they last. The less said about them the better, however. A child will find it much easier to learn to like squash, for example, if he does not have a reputation as a squash hater to live up to.

The Preschool Child

General Health Habits

The young child does not need as close medical supervision as the infant, but he should still be taken to the doctor at regular intervals. In general, the younger the child the oftener he should see a doctor. Beginning at the age of three, a child should visit the dentist every six months for examination, cleaning, and other necessary care.

Regularity makes the day easier for both mother and child. But at this age, as in infancy, regularity should not mean rigidity. A schedule should be worked out that takes into consideration the needs and habits of the other members of the family, and it should be understood that exceptions will often have to be made in it. The following is offered as a sample schedule that might suit the needs of some families.

7:30 a. m. Rise. Toilet. Wash. Brush teeth. Dress.
8:00 a. m. Breakfast. Toilet for bowel movement. Wash hands.
Brush teeth. Out of doors as soon after breakfast as
weather permits. Play in sun when possible.
11:45 a. m. Toilet. Wash hands and face.
12:00 noon Dinner.
12:30 p. m. Undress for nap. Toilet. Wash hands. Brush teeth.
Nap.
2:30 p. m. Toilet. Wash hands. Dress. Milk or fruit if needed.
Out of doors as long as weather permits. Play in sun
when possible.
5:00 p. m. Toilet. Undress. Bath.
5:30 p. m. Supper. Brush teeth.
6:00 p. m. Quiet play, stories, or music.
7:00 p. m. Toilet. Bed. Lights out, windows open, door shut.

Children of this age should be out of doors as much as possible. For this they should have a yard or a supervised playground where they can be safe and at the same time feel that they are on their own. A sandbox with spoons, pails, small wagons, is ideal for quiet play. But a child also needs more vigorous activity such as he gets from a seesaw, climbing bars, and a slide. Sometimes he wants to play by himself and sometimes with

children of his own age. And sometimes he wants to be with adults, to take a walk with his father or mother or to help them with what they are doing.

When a child is about 3 or 4 years old, difficulty may arise in getting him to take his daytime nap. Or he may be unwilling to go to bed at night and may lie awake after he does go. When this happens the parents should look for the cause of the trouble. Are they expecting him to sleep too long? Is his bed hour too early? Or has his play before bedtime been too stimulating? Is there too much irregularity about his sleeping times? Whatever is found to be the cause should be corrected, because lack of sleep is one of the most common causes of poor nutrition.

Children seldom say that they are tired. They show fatigue by becoming cross or restless oftener than by wanting to sit down or lie down. As a rule, the young child should "sleep the clock around." In addition he should have a regular daytime rest in a quiet room, even though he may not always fall asleep when he lies down. By the time a child is 6, his hours of sleep have often decreased to about 11.

Eating Habits

The way food feels and tastes to a young child leads to likes and dislikes at this age that are quite different from those of the older members of the family. Children differ in their food tastes, as they do in everything else, but for most children warm foods are more acceptable than either hot or cold ones; cereals, puddings, and mashed vegetables are eaten more readily if they are thinner than those served to grownups. Mild-flavored foods are usually better liked than salty, sour, or highly spiced foods. Vegetables that are both crisp and tender, such as carrot sticks, are well liked. A colored food, such as diced beets, makes the plate more appealing. Easily identified foods are usually more popular than mixtures. For the most part these preferences can be catered to and still take the young child's food from that prepared for the rest of the family.

Eating should be made as easy and pleasant as possible by seeing that the chairs are of the right height, cups easy to hold, that dishes do not tip over easily and that forks and spoons are small enough and easy to hold. ~~Do not use forks or spoons with curved handles as the child will have to learn all over again to use straight ones.~~

Very young children should be encouraged to feed themselves—as soon as they show they are ready by trying to do it. They will spill and scatter the food at first but they should be encouraged to keep on trying. Their food should be prepared in a form that is easy for them to eat. Meat should be cut in bite-sized pieces, peas should be mashed so a spoonful can be picked up easily. Raw fruits and vegetables should be in pieces that can be picked up in the hands. Even when a child feeds himself

quite well most of the time, parents will occasionally have to help him when he is tired or upset.

Food

The gradual extension of the diet begun in infancy is continued throughout the preschool period. The increased energy needs of the child as he grows older are provided for by larger amounts of cereals, bread, butter or margarine, potatoes, and other foods as his appetite demands. His added needs for proteins, minerals, and vitamins are met by more and larger servings of fruit, vegetables, eggs, meat, and fish. He should have plenty of water to drink but if water is available his own thirst will indicate how much he needs. Fish-liver oil should be continued during this period.

The foods which a child is likely to ask for between meals provide chiefly energy and cannot take the place of the essential foods that are normally served at meal times. Haphazard "piecing" spoils a child's appetite for his regular meals. However, some children of this age do better if they can have regularly scheduled light lunches between the meals that are farthest apart. The foods given at this time should contribute protein, minerals, and vitamins as well as satisfy the appetite. Fruit, milk, or bread spread with butter, margarine, or peanut butter are good choices.

There are unlimited ways in which meals can be planned to include the necessary foods. The following sample meals are only one example. Since children differ in the amounts they eat, the quantities shown here are only a general indication of what is probably true for most children.

A Sample Day's Meals for a 4-Year-Old

BREAKFAST

Orange.	Whole-wheat toast (2 thin slices) with
Oatmeal ($\frac{1}{2}$ cup) with milk ($\frac{1}{3}$ cup).	butter or fortified margarine (2
	teaspoonfuls).
	Milk ($\frac{1}{2}$ pint).

DINNER

Ground beef ball (1 small) or boneless	Green beans ($\frac{1}{4}$ cup) with butter or
fish.	fortified margarine ($\frac{1}{2}$ teaspoonful).
Baked potato (1 small) with butter or	Custard ($\frac{1}{3}$ cup).
fortified margarine (1 teaspoonful).	Milk ($\frac{1}{2}$ pint).

SUPPER

Poached egg.	Applesauce ($\frac{1}{2}$ cup) with milk (2 table-
Carrot strips (3 pieces).	spoonfuls).
Enriched bread (1 slice) with butter or	Milk ($\frac{1}{2}$ pint).
fortified margarine (1 teaspoonful).	

During early childhood, children like foods prepared in simple ways. Boil, mash, bake, or cream potatoes or make a potato-milk soup. Vegetables may be buttered or creamed; fruits and desserts should be only mildly sweetened. Raw milk should be boiled or used only in cooking. Vegetables and fruits should not be strained or mashed after the child has teeth, but for a few more years they should be free from coarse woody fiber, such as the strings in the outer stalks of celery. For young children it is undesirable to boil fat meat with vegetables. The fat tends to satisfy their appetite before they have eaten enough of the vegetables.

The School Child

ALTHOUGH the school-age child is not very different from the pre-school child, the mere fact of going to school brings problems. During the school year the meals, and other activities, have to be spaced in relation to the school schedule rather than to the children's needs or inclinations. For many children the school cafeterias suddenly offer increased freedom in selecting foods and they are exposed to a bewildering array of eatables, some of which make only a one-sided contribution to their nutritional needs.

Daily Routines

The need for sleep decreases as the child grows older, but there is danger of a too rapid letdown when he reaches school age. His nap is abandoned and the homework required in many schools and the child's natural desire to play or listen to the radio or television, all tend to keep him up beyond his natural bedtime. A child's sleep may be cut by 2 hours or more a night and he may become chronically fatigued and irritable. This should not be allowed to happen.

During the elementary school years a child's bedtime may be put later by about 15 or 20 minutes each year. But it should be a regular hour, regularly observed. What the hour should be will depend on whether or not school is in session and if so, on the time the child must leave in the morning. It should allow the child to get a full night's sleep and leave ample time for a leisurely breakfast and the early morning routines.

The necessity for plenty of time and space for outdoor play for school children should be recognized by parents and school authorities, and vigorous efforts should be made to provide both. If school children are to get as much outdoor play and exercise as they need, most of the time after school should be spent out of doors, as well as most of Saturday and Sunday. This means a great deal to the child's well-being. The child himself should be urged to play outside, instead of in, at such odd bits of time as recess and before and after lunch.

One of the most serious hazards to nutrition during the school age is the tendency to cut down on breakfast. This is often due to late rising, failure of the mother to have breakfast ready in time, and fear of tardiness. The child goes to bed late, arises late, and must hurry to get to school on

time. Naturally, he has no appetite. Even when there really is time to eat the fear of being late may take away his appetite. In either case the effect is to reduce the amount of food that the child eats at breakfast. This usually also reduces the total amount of food for the day, for children rarely eat enough at the other two meals to make up the deficit.

Parents should see to it that the child's bedtime is regular and early enough to give him sufficient sleep by the normal rising time in the morning. The rising time should be early enough to allow ample time for breakfast, and for washing, dressing, and going to the toilet. Young children have little understanding of the time required to do the various things that are necessary, and so may feel anxiety even without cause. The parents, by maintaining a well-organized morning routine should develop in the child a feeling of assurance that there is plenty of time for all the necessary things. They should then keep faith with the child by seeing to it that he always leaves for school on time.

This situation is a joint problem of the parents and the school. The teachers should cooperate with the parents in their efforts to see that the child eats a good breakfast. All talk about tardiness is out of place in the lowest grades. If a child is late, the responsibility is his parents'. The teacher should not complain about it to the child but should work the matter out with the parents.

The problem of an adequate lunch is also a joint problem of the parents and the school authorities. If children go home for lunch, enough time should be granted by the school to allow ample time for eating. The sense of hurry and anxiety should be avoided by the same means that have been suggested for breakfast. If the child carries his lunch to school, the mother of course should plan the meal as carefully as she plans his breakfast and dinner. When possible the lunch that is carried to school should be supplemented by one warm dish at school.

Food

The school child continues to eat the same basic foods that are given to younger children, but the quantities are increased to take care of his greater needs. Most school children are able to digest almost any food that is in the family diet and some foods that are unsuitable for younger children may now be given to them. It should be emphasized, however, that this variety is not necessary to good nutrition and that the real needs of the school child are fully met by the simple, bland diet of early childhood, provided the quantities are increased.

If the lunch is served at school it should, preferably, be in the charge of a person who is trained in child feeding and child psychology as well as in lunch room management, and who is truly interested in the welfare of children. The food served should be palatable, attractive, and suited

to the children's needs. A plate lunch in which a suitable combination of foods is offered should be served, especially to young children. If cafeteria service is provided, there should be a simple choice between nutritious dishes, and the foods should be arranged on the counter in the order of their importance in the meal. When the child eats a lunch served at school, it is the school's responsibility to see that the meal selected is fully adequate. This is an educational and not a policing job.

The following sample of meals for one day provides for lunch whether it is served at home, brought from home, or bought and served at school.

A Sample Day's Meals for a 10-Year-Old

BREAKFAST

Tomato juice ($\frac{3}{4}$ cup).	Toast (2 slices) with butter or fortified margarine (2 teaspoonfuls).
Hot whole-wheat cereal ($\frac{2}{3}$ cup) with milk ($\frac{1}{2}$ cup).	Milk ($\frac{1}{2}$ pint).

LUNCH

(If served at school or at home)

Creamed eggs ($\frac{3}{4}$ cup).	Oatmeal muffins (2) with butter or fortified margarine (2 teaspoonfuls).
Green beans ($\frac{1}{2}$ cup) with butter or fortified margarine (1 teaspoonful).	Milk ($\frac{1}{2}$ pint).

(If brought from home)

Sandwich—peanut butter and raw carrot on buttered whole-grain or enriched bread.	Sandwich—chopped dried fruit on buttered whole-grain or enriched bread.
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Supplemented at school by—

Orange.	Milk soup (1 cup) or cocoa (1 cup).
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DINNER

Meat loaf (1 serving).	Whole-wheat bread or enriched bread (2 slices) with butter or fortified margarine (2 teaspoonfuls).
Scalloped potatoes ($\frac{2}{3}$ cup).	Applesauce ($\frac{1}{2}$ cup).
Cole slaw with red and green peppers ($\frac{1}{2}$ cup).	Molasses cookies (2 thin).
	Milk ($\frac{1}{2}$ pint).

Parents and school authorities may well join forces to regulate the sale of extra foods in or near the school. These foods—candy, soft drinks, sweet cakes, pretzels, etc.—are often sold by street vendors, sometimes under unsanitary conditions, or featured in shops close to the school grounds. They may even be sold in the school to raise money for various projects. When they are substituted for the regular lunch, as they sometimes are, they contribute to malnutrition.

Steps should be taken to offer appealing and suitable foods. Ice cream and other well liked desserts containing milk can be featured at the noon meal. Fresh and dried fruits, fruit juices, popcorn, peanuts, and milk (white or chocolate) can be sold at reasonable prices to the child who is hungry at the recess period. Automatic dispensers seem to be as popular when they yield milk, fruit juices, or fresh fruits as when they provide the more traditional soft drinks and candies. As a part of their regular instruction in health, children should be taught the proper place of candy, soft drinks and other sweet foods. Since they furnish primarily energy and flavor, they should be used in moderation and at times when they will not cut down the appetite for meals. Preference should be given to those extras that contain not merely sugar and chocolate but also milk solids, fruits, nuts or soy products. Children should have a chance to compare the food value that they get for their money when they buy these different foods.

The Adolescent

THE nutrition problems likely to be encountered in adolescence are associated partly with a rapid rate of growth, intense activity, and the great variability among individuals. The physical, mental, and emotional changes of adolescence take place at different ages and at different rates in different children. As a result, no two adolescents of the same age can be expected to have the same needs. Nutritional supervision must be adapted to the individual and carried out in a way that seems reasonable to the child himself.

Daily Routines

For many children the change from a neighborhood elementary school to a junior or senior high school brings about not only increased nervous and mental stimulation but also increased exposure to infections. The strain of hurrying to and from classes, the strain of competitive athletics, the stimulation caused by extracurricular activities such as clubs and parties, the heavier home lesson assignments—all these are part of high-school life. But the combined effect of a number of these too often results in chronic fatigue and impaired nutrition.

A spurt in growth takes place as puberty is approaching if the child has sufficient food to support that growth and if his health is safeguarded so that he can use his food efficiently. Because of this extremely rapid growth, the older boy or girl may need even more sleep than the younger school child and if they do not get it many boys and girls may be sleepy and tired much of the time and unable to concentrate on their lessons. Parents should try to see that these older boys and girls get enough sleep for their needs. This is not as difficult as it may seem. Children of this age are better able to understand a situation that is explained to them than are younger children, and are usually anxious to get enough sleep when they understand the need for it.

The adolescent may still need cooperation from his parents in planning his time successfully. He needs more outdoor activity than many children of this age get. His need for plenty of food makes it especially important that he get a good breakfast. And for this, he must allow plenty of time. If he goes to bed too late he will get up too late, or be too sleepy, to eat

properly before he starts to school. If he sets out on a paper route before the rest of the family is up he may not have time to eat before he leaves or after he returns. Breakfasts that are ready on time and that taste too good to be missed are the least likely to be skipped.

Many boys and girls leave school and go to work while they are still in their teens. Some of them live away from their parents' home and their parents can no longer guide their diet and habits. Boys and girls, at home or away from home, should have some responsibility for their own health. They must understand that their bodies still need plenty of building foods. In regard to physical development they are still adolescents and have the same special needs as the boys and girls of the teen ages who remain in school. Many young people do not realize this and therefore fail to get the food, sleep, and outdoor exercise that they need at this age. Their employers may show concern for their physical well-being by providing palatable and nutritious meals at low cost. Young people's organizations may do the same and may also offer the opportunity to get wholesome rest and recreation. Unless, however, young people realize that they have special needs other than those of adults, they may fail to take advantage of such opportunities.

Community agencies, such as 4-H clubs, health departments, and church clubs for young people, can do a great deal in health education work for young people who are still in school as well as for those who are away from their homes and working.

Eating Habits

An adolescent boy may be so active and grow so fast that he actually needs more food than his father, or a girl, more than her mother. Usually boys of this age are "always hungry," though girls sometimes have finicky appetites. As both boys and girls of this age assert their independence they may reject temporarily the foods that have been the standbys of their diet in favor of foods that seem to them more in keeping with their status as almost adults. The chief dietary problem for parents at this period is to see that the foods eaten meet the increased energy needs without sacrificing any of the essential elements. It is important, too, that the foods be offered in a form in which they will be eaten cheerfully.

In order to meet heightened nutritional needs, the protective foods that are also concentrated sources of energy should be eaten in liberal amounts. These include butter, fortified margarine, cheese, peanut butter, baked beans, macaroni and cheese, ice cream, and puddings. Such foods may in fact be allowed almost without restriction, provided of course that they are eaten in addition to, and not in place of, the essential foods—milk, eggs, vegetables, fruits, potatoes, meat, and whole-grain or enriched cereals and bread—which are needed to supply minerals, proteins, and vitamins, in adequate amounts.

The day's meals for a very active boy 15 or 16 years of age may be as follows. For girls or for younger boys the amounts of the different foods will be smaller.

A Sample Day's Meals for an Adolescent Boy

BREAKFAST

Orange.	Eggs (2).
Shredded wheat with milk ($\frac{1}{2}$ cup).	Cocoa (2 cups).
Muffins (3) with butter or fortified margarine (2 tablespoonfuls) and marmalade (2 tablespoonfuls).	

LUNCH

Macaroni and cheese (2 large servings).	Baked apple (1 large) with sugar (1 tablespoonful) and cream ($\frac{1}{4}$ cup).
Sliced tomatoes (2) with mayonnaise (1 tablespoonful).	Cookies (2 large).
Rye bread (2 medium slices) with butter or fortified margarine (1 tablespoonful).	Milk ($\frac{1}{2}$ pint).

DINNER

Pot roast of beef (large serving).	Whole-wheat bread (2 medium slices) with butter or fortified margarine (1 tablespoonful).
Baked potatoes ($1\frac{1}{2}$ cups) with gravy ($\frac{1}{2}$ cup).	Milk ($\frac{1}{2}$ pint).
Cabbage (1 cup) with butter or fortified margarine (2 tablespoonfuls).	Rice milk pudding (2 servings).

Besides the three regular meals a day, additional food such as an after-school lunch may be needed in the adolescent period. If the after-school lunch is followed by outdoor activity and if the appetite for the evening meal is not diminished, parents may be sure that the additional food is beneficial. But for most adolescents, if the amounts given above are eaten in the three meals, no additional food will be needed.

The onset of menstruation at puberty influences the nutritional needs of adolescent girls. At this age they should have liberal amounts of food rich in protein, iron, and other dietary essentials involved in the formation and regeneration of red-blood cells. Sometimes an adolescent girl restricts her diet in an effort to keep thin. She not only eats too little, but she is especially likely to omit the essential foods. She is likely to omit potatoes and milk, with the idea that they are fattening, and she may even make a practice of omitting breakfast altogether. Parents should see to it that their daughters are exposed to sane standards of beauty as exemplified by older girls and young women whom they greatly admire. They can learn for themselves that many beautiful women often safeguard their health by eating and living sensibly. Some of the essential elements in their good looks are directly attributable to their good health—their sound, well-formed teeth, clear skin, glossy hair, and

air of vitality. The observant adolescent girl can learn to differentiate between slenderness and emaciation. Since most girls of this age are looking forward to marriage, they should know that there is a growing body of evidence that a woman's nutritional status at the time she becomes pregnant has considerable influence on her ability to bear a vigorous baby and to remain in good health herself.

Although overweight is not common in the adolescent years, it presents real problems to those few children who are affected by it, and should be treated. Every effort should be made to find out why a child is eating more than he needs and to work out a program that offers substitute satisfactions for those he is getting from overindulgence in food.

Ideal weight varies among individuals of the same age, according to sex, body build, heredity, and other factors. If a child seems to be gaining weight too rapidly, the doctor should be asked whether or not a reducing diet is advisable. If the doctor decides that the weight is excessive he will probably recommend that the amount of energy foods in the diet, such as sweets and fats, be decreased, but that plenty of the basic foods—milk, vegetables, eggs, meats, fruits, and whole-grain or enriched breads and cereals—be eaten, so as to protect the body from malnutrition. Indeed, the amounts of the essential foods in the diet, especially fruits and vegetables, may need to be increased as an extra safeguard when less of the energy foods is eaten.

The Child with Special Food Needs

SO far this bulletin has been concerned with the nutritional needs of the average healthy child. But sometimes a child has special needs for food because of a special physical condition. The child who has become malnourished must have special attention if he is to be brought back to full health. Sick children, whether their illness is acute or chronic, and children suffering from physical handicaps that affect nutritive needs also need special care. Even though the nutritional state of these children may not have caused their physical condition, diet is likely to play an important part in the control of the disease and the rate of recovery.

The Sick Child

The sick child has to have careful supervision of his diet if he is to become and to remain well nourished. Once the doctor has prescribed the kinds and quantities of foods that are best for the individual patient, it is up to the person responsible for his diet to see that these foods are offered in such a form that they will be eaten and—if possible—enjoyed. Acutely sick children often have little appetite and may have so much difficulty in eating that they would prefer to go unfed. Sometimes the doctor can reassure the family that missing a meal is nothing to worry about in an illness of short duration. If regular food intake is important however, it may take considerable ingenuity to get the necessary nourishment into the child since this must be done without upsetting his digestion or his peace of mind. Juices or milk drinks “padded” with dry skim milk and eggs and pleasingly flavored can supply a surprisingly large proportion of the requirement for energy, protein, minerals, and vitamins. Sick children often need to be helped and encouraged to eat but encouragement does not mean coaxing or bribing with unsuitable foods.

As the acute stage of the disease subsides and convalescence begins, appetite is likely to improve. The diet now has to provide liberal quantities of proteins, minerals, and vitamins in order to replenish muscles and other tissues that have been depleted during the active phases of the disease. Parents need to be especially careful at this time not to urge a child to eat more than his appetite dictates. Nothing but harm can come of this. But the parents can see to it that the appetite is not dulled by concentrated sweets and other foods that supply only energy.

Foods that make a many-sided contribution to the diet, such as milk products, meats, eggs, fruits, vegetables, and whole-grain and enriched bread and cereals, can be prepared in such appetizing ways that the child will be satisfied with these, and so get the elements that he needs most.

The child whose diet has to be modified over a prolonged period, because he has either a chronic disease or some physical handicap that affects his need for food or his food intake (or both), presents quite a different problem from the acutely ill child. A meal pattern has to be worked out for him that meets his physiological needs and that he finds satisfying day in and day out. It is important too that the diet be so managed as to foster good emotional health, avoiding giving the child on the one hand a sense of deprivation or on the other hand a feeling of undue importance because he has delicacies not shared by others. It takes understanding and resourcefulness on the part of whoever is responsible for supervising the child's diet to see that the right food is available and is served unobtrusively. It takes teamwork on the part of all the child's associates to develop the emotional adjustment that makes for a healthy attitude on his part toward his special diet. Parents of a child on a special diet should be able to get helpful advice from the doctor and from community health agencies, especially those that have nutritionists, nurses, and medical social workers on their staffs.

The Child Who Is Overweight

In the case of the child who is definitely overweight, the doctor will try to find out how much food is being eaten and how fast it is being used for bodily activity. The idea that overweight is usually an evidence of glandular deficiency, to be corrected by administration of thyroid or other glandular extract, is not supported by clinical findings. If the child is eating more than he needs—as is frequently the case—the next question to be answered is “Why?” Perhaps he is merely following the example of others in the family. Or it may be that his friends have gotten into the habit of buying between-meal snacks that are high in calories. Some children overeat because they lack other sources of satisfaction. The correction of overweight, then, calls for reducing the food intake so that the excess pounds gradually disappear and at the same time eliminating the cause to prevent a recurrence of the condition. If a child wishes to lose weight, he may find that it helps to make a chart on which he can watch his progress toward the goal that the doctor and he have decided he might be able to reach in a given period. At the time that extra pounds are being taken off, the child still needs the foods that build muscle, bones, and blood. It is the foods that supply calories and little else that can be safely eliminated as long as weight is too high. These are the foods that a child with a tendency to be fat will have to eat in moderation even after he is down to a desirable weight.

Reducing is likely to be something of an ordeal for both the child and his associates. Parents who are alert to the first indication that a child is getting too fat can see to it that meals are appetizing without being overloaded with calories and that the child has normal emotional outlets so that he does not have to seek satisfaction in overeating.

The Child Who Is Generally Malnourished

Physicians often rate a child's nutrition as "excellent," "good," "fair," "poor," or "very poor." But no parent should be satisfied with a rating of "fair." In fact, any child who is not in the "excellent" group should be considered in some degree malnourished and efforts should be made to improve his condition.

The physician to whom a parent takes a malnourished child will first of all find out whether there is any chronic disease or physical defect interfering with the child's nutrition. Then, with the help of the parents, he will make a careful study of the child's diet, his sleep habits, and his entire way of living. Once he has made up his mind as to the cause of the child's malnutrition, the doctor will advise the parents what they can do to improve the situation.

Following out these directions may not be easy. Habits of eating, sleeping, and physical activity, are hard to change. A badly selected diet in the past may have given the child food prejudices that will require time and tact on the part of the parents to remove. The effects of malnutrition, with the exception of certain types of defects in the bones and teeth, can be remedied to a great extent by improvements in the child's eating habits. Of course, the earlier such improvements are begun, the better. But in general, a child who has been malnourished in the past can be brought up to a high standard of health if good diet and good health habits are continued for a long enough period of time.

Appendix

Some Common Foods and Their Most Important Contributions to Body Needs

Food	Contributions
MILK AND CHEESE	
Fresh whole milk (or its equivalent in unsweetened evaporated or dried whole milk).	Is main source of calcium and riboflavin. Supplies also protein, vitamin A, and thiamine.
Fresh skim milk and buttermilk (or equivalent in dried skim milk or dried buttermilk).	Make same contributions as whole milk, except vitamin A.
Cream.....	Contributes more vitamin A than whole milk does and less of the other vitamins and minerals.
Cheese made from whole milk.....	A generous serving supplies equivalent of 1 cup whole milk in protein, calcium, and vitamin A.
Cottage cheese.....	Is good source of protein; is low in the other minerals and in vitamins.
FRUITS	
Fruits in general.....	All fruits help in meeting the body's needs for iron, thiamine, and riboflavin. Some fruits make special contributions, as is shown below.
Oranges, grapefruit, strawberries, cantaloupe.	These fruits are the best source of vitamin C. One average serving will supply a day's need for vitamin C for most persons.
Apples, bananas, peaches, pears, and most of the common fresh fruits, <i>raw</i> .	These fruits, eaten <i>raw</i> in generous quantities, provide some vitamin C, although much less of it than the fruits listed above.
Peaches, apricots, and prunes, and other yellow-fleshed fruits.	Yellow-fleshed fruits supply important amounts of vitamin A.
Dried apricots, dates, figs, prunes, and raisins.	These dried fruits are better than average sources of iron.
SALT	
Iodized salt.....	Provides iodine in those regions of the country where salt-water fish is not available.

Food	Contributions
VEGETABLES	
Vegetables in general	Are important sources of various minerals and vitamins, some more than others, as is shown below.
Broccoli, chard, kale, spinach, turnip greens, watercress, and other thin, dark-green leaves.	Thin, dark-green leaves, eaten raw or properly cooked are an important source of iron, vitamin A, thiamine, riboflavin and niacin. Generous servings of such greens, raw, supply liberal amounts of vitamin C. Many of these greens help to fulfill the body's needs for calcium.
Asparagus, peas, string beans, sweet-potatoes, carrots, and other green or deep-yellow vegetables.	Other green vegetables and deep-yellow ones are valuable chiefly for vitamin A. Sweet-potatoes are economical energy foods.
Cabbage	Is a good source of vitamin C when eaten raw. If cabbage is chopped and allowed to stand, vitamin C is lost.
Tomatoes—raw, cooked, or properly canned.	Are an excellent source of vitamin C and a good source of vitamin A.
Potatoes, white (Irish)	Cooked in skins, potatoes, especially new potatoes are a good source of vitamin C, and provide appreciable amounts of iron, thiamine, riboflavin, and niacin. They are also economical energy foods.
Mature beans (navy, soy, and other), peas, and other legumes, such as peanuts and lentils.	Are good sources of protein, iron, thiamine, and riboflavin. Help to meet the body's needs for calcium. Are economical energy foods.
EGGS, LEAN MEAT, FISH	
Eggs	} Are most important for protein, iron, thiamine, riboflavin, and niacin. Eggs and liver supply vitamin A. Salt-water fish and shellfish supply iodine.
Lean muscle meat, including poultry . . .	
Liver, kidneys, and other organs	
Fish	
Shellfish, such as oysters	
GRAIN PRODUCTS	
Grain products in general	Are economical energy foods that furnish significant amounts of protein.
Whole-grain or enriched bread and flour, and cereals.	Are important sources of iron, thiamine, riboflavin, and niacin.
Macaroni, hominy grits, white rice . . .	Are refined grain products; they cannot take the place of potatoes or other vegetables.

Food	Contributions
NUTS	
Nuts in general ¹	Are concentrated sources of energy and protein and fairly good sources of thiamine.
SUGAR AND SIRUPS	
Refined sugar.....	} Are concentrated energy foods. Dark molasses and sorghum sirup contribute also calcium and iron.
Corn sirup.....	
Honey.....	
Molasses.....	
Sorghum sirup.....	
FATS AND OILS	
Butter.....	} Are concentrated energy foods. Butter, fish-liver oil, and fortified margarine are important sources of vitamin A. Fish-liver oil is also very rich in vitamin D.
Fortified margarine.....	
Lard and hardened vegetable fats.....	
Olive and other salad oils.....	
Bacon.....	
Salt pork.....	
Fish-liver oil.....	

¹ This does not include the peanut, which is a legume and is therefore listed with the vegetables.



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