
UNITED STATES DEPARTMENT OF LABOR
FRANCES PERKINS, Secretary
CHILDREN'S BUREAU - - Katharine F. Lenroot, Chief

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INFANT CARE

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Bureau Publication No. 8
(WITH ALPHABETICAL INDEX)



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Letter of Transmittal

UNITED STATES DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,

Washington, November 24, 1939.

MADAM: There is transmitted herewith a revised edition of *Infant Care*, which follows in the main the edition of 1938, differing chiefly in the addition of an index and in the recommendation of the larger quantities of vitamin C, which recent research has shown to be necessary.

Infant Care was first published in 1914 and was rewritten in 1929 by Dr. Martha M. Eliot, now Assistant Chief of the Bureau.

The present revision and that of 1938 are the work of Dr. Ethel C. Dunham, Director of the Division of Research in Child Development of the Children's Bureau, and Dr. Marian M. Crane of that Division, with the assistance of the Bureau's advisory committee of pediatricians: Dr. Julius H. Hess, representing the section of diseases of children of the American Medical Association; Dr. Richard M. Smith and Dr. Barnet E. Bonar, representing the American Pediatric Society; Dr. J. H. Mason Knox, representing the American Academy of Pediatrics; and Dr. Howard Childs Carpenter, for many years representing the American Child Health Association until that organization dissolved in 1935. Dr. Bonar's death, early in 1938, deprived the committee of the newest member, whose counsel had been most helpful.

Respectfully submitted,

KATHARINE F. LENROOT, *Chief.*

Hon. FRANCES PERKINS,
Secretary of Labor.

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INFANT CARE

The New Baby

HOW FAST does a baby grow, in weight, in height, in "wisdom and understanding"? What should we feed him? How should we clothe him? How can we keep him well? How can we prevent or cure illness? How can we teach good habits? What danger signals should we watch for? These are some of the questions that parents ask and that this bulletin will try to answer.

When a baby is born, whether it is the first one in the family or not, the first questions that must be answered are—how to help him develop normally and how



The newborn baby is the center of attention

to keep him well. For months the parents have been looking forward to the arrival of the baby and have been making plans for his care. (For care before birth see Prenatal Care, U. S. Children's Bureau Publication No. 4.) Now that the baby is born the responsibilities of the parents with regard to his care and bringing up become more immediate. They have in their charge a helpless infant who for a long time will be dependent upon them for supplying all his needs. At first only the physical needs are obvious, but the parents must remember that the

character building of their child is closely tied up with the way his physical needs are met. His future mental health, as well as physical health, will depend largely on the habits he builds during the first year of life, especially the early months.

Every child carries in his inherited make-up many qualities. Which ones are to predominate in his future life will depend largely on his surroundings—the food and care he gets, the persons he learns to imitate, the ideals and standards of his home. As soon as the baby is born he begins to live in the surroundings that the parents have provided. Immediately he begins to learn by his experiences. From the hour of birth he learns from everything around him.

The care of a baby is a great responsibility, which can be carried successfully if the parents regularly seek the advice of a physician trained in the care of infants and if they follow simple rules for feeding, sleep, out-of-door life, and general care. The rules outlined in this bulletin are the result of the experience of physicians over many years and are offered as a help to parents in the care of young babies; but they are not intended in any way to take the place of regular visits to the family physician.

Sometimes a young mother has so much advice from earnest and well-meaning friends that she is bewildered. Their advice may or may not be good. Sometimes the advice of one friend conflicts with that of another. The doctor should be the mother's guide, and this book is intended to help her carry out his orders intelligently.

Baby care is a great art. It is the most important task any woman ever undertakes, and she should apply to this work the same diligence, intelligence, and sustained effort that she would give to the most exacting profession. Her husband shares the responsibility for the child's training, whether or not he helps with the child's physical care. The parents should work together from the baby's birth to teach him good habits.

Development of the Baby

THE FIRST year of life is probably the most important because it is during this period that the baby grows fastest and undergoes the remarkable development that transforms him from a helpless little being into an individual who laughs, plays, stands, and tries to talk.

Not only does a baby grow a great deal during this year, but he learns a great deal. He learns to eat and sleep at regular times and to eat a number of new foods, to hold up his head, to sit up, to stand, and sometimes to walk. He learns to handle objects, to reach for them, and pick them up; to know what various things around him are used for, such as spoon, cup, bed, ball, blocks, and to use some of these without help; to know one person from another; to know and use a few words. He learns also whether crying will make his mother pick him up whenever he wishes, or whether crying is useless as a means of getting her attention. He learns to be part of a family group and to accept new experiences every day.

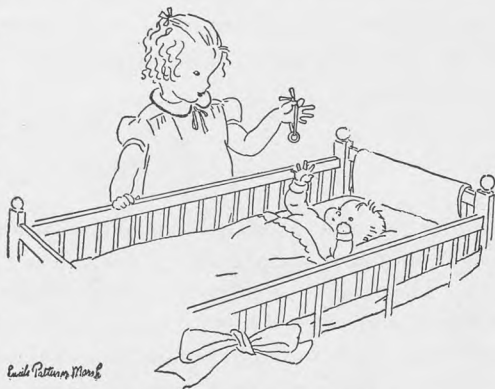
THE BABY AT BIRTH

At birth the average baby weighs about 7 pounds and measures 20 to 21 inches in length. He has a good pink color; he squirms and wriggles when handled, pulls up his legs, stretches them out, clenches his fists, puckers his face, and cries lustily. He sucks and swallows food and sleeps. He has no habits at birth. Habits are formed only by doing the same thing over and over again. Immediately after birth he will begin to form habits, which if they are the right kind will be useful to him all his life. Regularity from birth on is of first importance.

Through training in regularity of feeding, sleeping, and elimination (emptying the bowels and bladder) the tiny baby will receive his first lessons in character building. He should learn that hunger will be satisfied only so often, that when he is put into his bed he must go to sleep, that crying will not result in his being picked up or played with whenever he likes. He will begin to learn that he is part of a world bigger than that of his own desires.

THE BABY AT 4 MONTHS

If parents watch the baby for signs of development they see marked changes during the first 3 or 4 months. At 4 months the baby has nearly doubled his weight and has grown $2\frac{1}{2}$ to $3\frac{1}{2}$ inches in length; his head has grown about 2 inches larger around. At 4 months his muscles are much stronger, so that he kicks



Child Patterns Month

At 4 months he is a personality

more vigorously, he tries to turn over, and he can hold up his head steadily if his body is supported. The 4-month-old baby looks about, discovers his own hands, begins to recognize his mother and perhaps other members of the family, and is learning to reach for objects around him. He makes known his likes and dislikes by gestures and facial expressions; he usually has begun to laugh aloud. In 4 short months he has changed from the little wriggler to a baby with definite individuality. He has already begun to form habits of daily living, such as eating, sleeping, and elimination. The parents should see that these habits are the right ones. (See p. 38 for discussion of habits.)

THE BABY AT 8 MONTHS

During the period from 4 months to 8 months of age the baby is still growing rapidly in weight and height. At 8 months the average baby weighs between 16 and 19 pounds and measures between 25 and 27 inches in length, depending on his type—whether tall and slender or short and stocky. His head is growing but not quite so fast as in the first 4 months. His muscles are stronger; he is able to sit up without support. He probably has begun to creep. He is using his hands better by 8 months and has learned to pick up and handle large objects, like rattles, blocks, balls, and dolls, then gradually smaller and smaller objects, such as spoons. He is interested in



Lucy Patterson Merrill

The baby at 8 months will creep after his ball

looking at objects and feeling them and in learning what things around him are like. Most babies at 8 months have discovered their own voices and make various sounds, such as "ma-ma-ma" and "da-da-da," but they do not say words to which they attach any meaning. Many babies have cut one or two teeth. During the period from 4 months to 8 months the baby should begin to learn to eat solid foods. By 8 months he has nearly reached the end of the breast-feeding period, and weaning has been begun.

THE CHILD AT 1 YEAR

From the ninth to the twelfth month of his first year the baby continues to gain weight but not so fast as before. When he is 1 year old the average child weighs about 21 pounds (three times his birth weight). He measures 25 to 35 inches in height, and his head is much larger than at birth. Many children by the time they are 12 months old have lost some of their chubbiness and are lengthening out into the slenderer type of body build seen in the second year. Some children remain fat during this period, and some grow tall without gaining greatly in weight. Children vary considerably according to the family type and the nationality and race. No two are exactly alike in growth.

During the period from 8 months to 1 year the baby learns to take cow's milk and various solid foods, which will be the basis of his diet for the next 3 or 4 years. By the end of the first year he has given up the bottle and is learning to hold his cup of milk and perhaps to help hold his spoon (an ordinary teaspoon). He is entering the period of early childhood and should no longer be treated as a baby. The parents should help him grow up by teaching him to do things for himself. He should be learning to pull off his stockings at bedtime. It is good for a little child to learn to be independent in feeding and dressing himself, in picking up his toys, and in playing alone. Training in self-reliance should have begun by the time he is a year old.

The muscles have developed rapidly. At 1 year the average child creeps and pulls himself up to a standing position. Many children of this age can stand alone, and occasionally a child of the small, wiry type can walk. At 1 year the child can use his hands well and has begun to do things with a ball and boxes and blocks. (See back cover.) He may be able to say one or two words and associate them with the persons or objects to which they belong, such as mamma, dada, kitty, milk, water.



At 1 year he can help to hold his cup

At 1 year, if the mother has been training the baby properly, he has learned control of his bowels and may have begun to learn control of his bladder. (See p. 41.)

Most children at 1 year have six teeth.

THE SECOND YEAR

When your child begins to stand and walk and talk he is no longer a baby. Though he is still dependent on you for almost everything, he is daily becoming less so and is daily learning to do more for himself. He should be encouraged in this increasing desire for independence. It is much better that a child should be helped to grow up by his parents than that he should be "babied" too long. Parents who look upon the little child as "too little to be taught" or "too young to understand" are piling up trouble for him as well as for themselves. The second year is the beginning of the preschool years when many of the most important life habits will be learned. During this time the parents are the child's teachers, and they should continue to plan together and work together to help the child to have a healthy body and a healthy mind.

For suggestions on the care of children from the first birthday to the sixth send to the United States Children's Bureau, Washington, D. C., for *The Child From One to Six* (Bureau Publication No. 30).

Baby's Daily Schedule

IT IS advisable to establish at an early age a schedule for the baby's daily program. This time table is made for mother and baby, and certain adjustments must be made in compliance with the life of the family. It is important, however, that the infant should be fed at regular intervals and at the same intervals each day. The usual interval between feedings is 4 hours, but during the early months some physicians prescribe a 3-hour feeding interval. The first feeding is usually given at 6 a. m., but if the day for baby and mother begins at 7 a. m. then the schedule must be adjusted accordingly, keeping the intervals between feedings the same.

Following is a suggested schedule during the first 4 months for a baby on a 4-hour schedule. This may be varied according to the directions of the physician.

FIRST FOUR MONTHS

- 6.00 a. m. **Breast feeding.** Put in crib to sleep.
- 9.15 a. m. Undress baby for bath. Give plain cod-liver oil or other source of vitamin D (to be ordered by physician), followed by orange juice or tomato juice. Before bath let baby kick and exercise for a few minutes while lying on bed. Bath.
- 10.00 a. m. **Breast feeding.**
- 10.20 a. m. Long nap indoors with window open or out of doors according to weather. Sun bath may be given before nap. (For time out of doors and in sun see p. 33.)
Drink of water after nap.
- 2.00 p. m. **Breast feeding.**
- 2.20 p. m. Long nap indoors with window open or out of doors. After nap, drink of water.
- 5.15 p. m. Undress for night. Before putting on baby's night clothes let him play a few minutes.
Cod-liver oil or other source of vitamin D and orange juice or tomato juice.
- 6.00 p. m. **Breast feeding.**
- 6.20 p. m. Bed; lights out, window open, door shut.
- 10.00 p. m. **Breast feeding.**
- 2.00 a. m. **Breast feeding.** (This feeding need not be given after the baby is 2 months old.)

FIFTH AND SIXTH MONTHS

- 6.00 a. m. **Breast feeding.** Leave baby alone in crib to sleep or play.
- 9.15 a. m. Plain cod-liver oil or other source of vitamin D (to be ordered by physician), then orange juice or tomato juice.
Bath. Before bath let baby kick and play freely on bed a few minutes without clothes.
- 10.00 a. m. **Cooked cereal, then breast feeding.**
- 10.20 a. m. Sun bath and long nap out of doors if weather permits, or nap indoors with window open. Drink of water after nap.
- 2.00 p. m. **Egg yolk, vegetables mashed through a strainer (from sixth month on), breast feeding.**
- 2.20 p. m. Out of doors if weather permits—in sun part of the time on very hot days. Short nap. Sun bath may be given before nap. Drink of water after nap. Play.

- 5.15 p. m. Undress for night. Before putting on baby's night clothes let him kick and play quietly on bed a few minutes.
 Cod-liver oil or other source of vitamin D and orange juice or tomato juice.
- 6.00 p. m. **Breast feeding.**
- 6.20 p. m. Bed; lights out, window open, door shut.
- 10.00 p. m. **Breast feeding.** (If the baby does not waken this feeding may be omitted.)

SEVENTH, EIGHTH, AND NINTH MONTHS

- 6.00 a. m. **Breast feeding.** Leave baby alone in crib to sleep or play.
- 9.15 a. m. Plain cod-liver oil or other source of vitamin D (to be ordered by physician), then orange juice or tomato juice.
 Bath. Before bath let baby kick and play freely on bed a few minutes without clothes.
- 10.00 a. m. **Cooked cereal, then breast feeding.**
- 10.20 a. m. Out of doors till feeding time if weather permits. Long nap, followed by drink of water. Play.
- 2.00 p. m. **Vegetable and egg yolk, then breast feeding.**
- 2.20 p. m. Out of doors if weather permits—in sun part of the time except on very hot days.
 Short nap. Drink of water after nap. Play.
- 5.15 p. m. Undress for night. Before putting on baby's night clothes let him play on bed a few minutes. Play must not be exciting nor rough.
 Cod-liver oil or other source of vitamin D and orange juice or tomato juice.
- 6.00 p. m. **Cooked cereal, then breast feeding.**
- 6.20 p. m. Bed; lights out, window open, door shut.
- 10.00 p. m. **Breast feeding.** (This feeding may be omitted during this period.)

TENTH, ELEVENTH, AND TWELFTH MONTHS

- 6.00 a. m. **Boiled whole milk.** Leave baby alone in crib to sleep or play.
- 8.15 a. m. Plain cod-liver oil or other source of vitamin D (to be ordered by physician), then orange juice or tomato juice. Bath.
- 9.00 a. m. **Breakfast: Cooked cereal with boiled whole milk.**
- 9.20 a. m. Out of doors till dinner, if weather permits. Sun bath may be given before nap.
 Long nap. Play.
- 1.00 p. m. **Dinner: Egg yolk; green vegetable; baked potato; boiled whole milk.**
- 1.20 p. m. Out of doors if weather permits, in sun part of the time except on very hot days. Short nap. Drink of water after nap. Play in crib.
- 5.00 p. m. Undress for night. Play and exercise on bed or on blanket on the floor.
- 5.15 p. m. Cod-liver oil or other source of vitamin D and orange juice or tomato juice.
- 5.30 p. m. **Supper: Cereal, zwieback, or dry toast; applesauce or prune pulp; boiled whole milk.**
- 6.00 p. m. Bed; lights out, window open, door shut.

Keeping the Baby Well

THE LARGE majority of babies are well when they are born. It is important to know how to keep them well. Preventing illness in babies is better from every point of view than curing it. Many diseases of infancy are much less common today than they used to be because modern science has found out how they can be prevented. Some diseases can be prevented by feeding the baby properly and by giving him plenty of direct sunlight and some by vaccinating or inoculating him with protective substances. Some diseases can be avoided only by keeping the baby away from places where he may come in contact with persons who have the diseases, by keeping flies and other disease-carrying insects away from him, and by sterilizing (boiling) all artificial food and everything he is likely to put into his mouth—in other words, by keeping the germs which cause the diseases away from the baby.

The best way to prevent infection is to prevent exposure. Never take a baby into a crowded place, for some one in the crowd may have a cold and the baby is likely to catch it. Avoid baby shows. In selecting a nurse or a maid who will help with the care of the baby take great pains to get one who is healthy. Before such a person is engaged she should be examined by your doctor and should have a blood test for syphilis and an X-ray of the lungs.

In addition, regularity in the care of the baby and the establishment of routine health habits are necessary if he is to be kept well. The daily round of bathing, dressing, feeding, sleeping, outdoor life, play, exercise, and elimination must be always regular. The times at which these routine activities are carried out do not need to be the same for all babies. They should be planned in connection with the mother's day and with that of the rest of the family, and one must never forget that every baby is an individual and should be studied and planned for as such.

MEDICAL SUPERVISION

To keep a baby well there should be continued supervision by a doctor trained in the care of babies. The mother cannot know nor recognize many of the early signs of trouble because she is not trained to do this and because she is too near the baby and sees him too often to realize that any change is taking place. The doctor, who sees the baby once or twice a month, looks at him with a trained eye and can see whether his color is as good as usual, whether his activity is as it should be, or whether he shows any early signs that are the forerunners of trouble. A mother may not know just when her particular baby needs to have his food changed or increased, nor when is the best time for her baby to be protected from diphtheria and smallpox. Such things as these the doctor will know,

and his advice is of the greatest importance to every mother who would keep her baby well. The doctor's supervision of a baby should begin as soon as the baby is born.

VISITS TO THE DOCTOR

Regular visits to the doctor, either at his office or at a child-health center, should be made for general supervision and advice at least once a month so that the mother may discuss with him the baby's diet and outdoor schedule, as well as his habits of eating, sleeping, exercise, and elimination. Complete health examinations should be made at least four times during the first year—at 3, 6, 9, and 12 months of age—in addition to the complete examination made at birth and at the end of the neonatal period (1 month).

At the first visit to the doctor the weight will always be taken and recorded and certain measurements of the baby will be made. The doctor will measure the height (length), also the circumference of the head, and in certain instances he will make other measurements of the body.

WEIGHING THE BABY

From birth to 6 months of age every baby should be weighed once a week, whether at home, at the doctor's office, or at one of the well-baby conferences or child-health centers that are conducted in many places for mothers unable to obtain these services otherwise. (Ask at your city or county health department for the address of the well-baby conference or child-health center nearest your home.) At the regular visit to the doctor the mother should report the baby's weekly weights since the last visit. Continued failure to gain should be reported to the doctor promptly.



The weekly weighing

To weigh the baby at home undress him completely. Put a soft cloth or clean paper in the pan of the scales and lay him on it, or if the room is not warm wrap him in a blanket. Weigh him carefully and write down the weight. Remove the baby, weigh the blanket or cloth, and subtract this amount from the first weight.

If the progress in weight is satisfactory until the baby is 6 months old, weigh him once every 2 weeks from this time until he is a year old. Steady gain in weight throughout the first year of life is one of the best indications of health.

Figures for weight and height are chiefly valuable to the doctor if he can compare them with a record of the baby's earlier weight and height and thus learn whether the baby is growing and gaining satisfactorily.

HOW THE DOCTOR JUDGES THE BABY'S PHYSICAL CONDITION

The baby's physical condition is best determined through examination by a doctor, who will take into account not only his present weight and height but his rate of gain in weight and height.

When the doctor makes a health examination he will undress the baby completely, weigh him, measure his height, and examine his head, eyes, ears, nose, neck, mouth, gums, teeth, tongue, throat, glands, heart, lungs, abdomen, genitals, back, arms, legs, feet, bones, skin, and posture (if he is old enough to stand). The doctor will also carefully note the amount and firmness of the tissues, the color of the skin and the mucous membranes, as well as the activity of the baby and the presence or absence of defects or diseases.

The doctor will then determine whether the baby is gaining weight at a proper rate. There are marked variations in the weights of different healthy infants of



The regular health examination

the same age, and no satisfactory standard can be set up for what babies should weigh at different ages. Race and sex affect the height and weight, and heredity is an important factor. The child of tall slender parents has a different body build from that of the baby whose parents are short and stocky. Weight-height-age tables are based on the average heights and weights of a large number of babies. (See p. 79.) Such a table may not provide a suitable standard for comparison with your baby. The important point to determine is that the baby is gaining regularly in weight. An average gain of 4 to 8 ounces a week during the first 6 months and of 3 to 5 ounces a week during the second 6 months can be considered satisfactory. *Gain* in weight is the best single index of physical well-being during the period of infancy.

HOW TO PREVENT DISEASES

PREVENTION OF DIGESTIVE DISTURBANCES

Digestive disturbances, such as diarrhea and vomiting, may be due to a variety of causes. They are more likely to occur during hot weather, but they may occur at any time. They are sometimes due to improper food, or they are likely to precede or accompany some infection such as a cold or an abscess in the ear, or they may be evidence of other infections such as dysentery and typhoid fever. They may usually be prevented by proper feeding and care, by avoiding infections, and by cooking all food and boiling milk and water given to the baby. (For prevention of infections, such as colds, see p. 12.)

Breast-fed babies do not have digestive troubles so much as artificially-fed babies. Most well mothers can nurse their babies and thus save them from much sickness.

If the baby is artificially fed, boiling the milk will prevent many digestive disturbances. A good grade of clean milk, pasteurized, should be bought. All milk should be placed in the ice box and kept there. In summer special care must be taken to get good clean milk and to prepare it properly. Most of the danger for which hot weather is ordinarily blamed, especially during weaning time, can be avoided if the baby's milk is boiled and protected from contamination.

PREVENTION OF DISEASES DUE TO VITAMIN DEFICIENCY

Certain diseases are caused by the lack of necessary vitamins (for vitamins see pp. 44 and 57) and are therefore called deficiency diseases. Such diseases are scurvy, rickets, pellagra, beriberi, and xerophthalmia.

Scurvy is a nutritional disease caused by lack of vitamin C in the food. It prevents the baby from gaining weight satisfactorily, makes him pale and irritable, brings about a tendency to bleed, and has other unfavorable effects. To prevent this disease orange juice, tomato juice, lemon juice, or other fruit juice containing large amounts of vitamin C should be used daily. (See p. 57.)

Rickets is a nutritional disease affecting especially the bones and muscles and resulting in deformities such as bowlegs. It may be prevented by the daily use of cod-liver oil or some equally effective substance (to be recommended by the doctor) that is known to contain vitamin D, the "antirachitic factor," and by daily sun baths. In the Temperate Zones, where rickets affects many babies, if children are to grow normally and avoid this disease it is advisable that they have both sun baths and cod-liver oil or some equally effective substance from the first month of life to the end of at least the second year. (See pp. 33 and 57.)

Beriberi is still another of these deficiency diseases, which affects the appetite and the digestive and nervous systems. It is due to lack of vitamin B, which is present in human milk and cow's milk, egg yolk, green leafy vegetables, and most fruits and whole-grain cereals. Infants taking the usual amounts of these foods are protected. Breast-fed infants whose mothers take the usual amounts of these foods are protected.

Xerophthalmia.—Certain abnormal eye conditions are caused by insufficient amounts of vitamin A. Changes may take place in the interior of the eye (the

retina) causing night blindness or in the exterior part (the cornea) causing destruction of its tissue (xerophthalmia). Vitamin A is contained in cod-liver oil and other fish oil, in butter (but not in vegetable fats), and in green leafy vegetables, yellow tubers, and a number of other vegetables and fruits. Babies receiving cod-liver oil in the usual doses are amply protected.

Pellagra, a disease due to food deficiencies, is rare in infants. Under ordinary conditions, human milk and cow's milk protect the infant against this disease.

PREVENTION OF ANEMIA

Anemia is a condition in which the child's blood has less coloring matter than it has under normal conditions. If the baby looks pale the blood should be tested by the doctor. Anemia is often seen in babies who are on a diet deficient in iron, such as milk, sugar, and cereal only. Giving the baby enough green leafy vegetables, egg yolk, and fruit juice helps to prevent anemia of this type. (For suggestions regarding these foods, see p. 57.)

PREVENTION OF GOITER

In the region of the Great Lakes and other so-called "goiter regions" mothers and babies may need small amounts of iodine daily, in addition to that in the food, to prevent goiter. Ask your doctor whether you and your baby need this, and if so, how it should be given.

PREVENTION OF COLDS

Babies are very susceptible to common colds and are frequently made very ill by what is "just a cold" in an adult. All persons having colds or coughs should be kept away from the baby. No one should talk or lean over a baby, or breathe in his face, since breath carries a fine spray which may be loaded with germs. Some persons, though they apparently have no colds themselves, are carrying germs in their noses or throats which will produce disease in a baby.

It is important not to overheat the room in which the baby lives. It is also important to keep the air fresh and to prevent excessive dryness. Even in cold weather the windows should be kept open a little way at the top, or at the bottom if a screen or a window board is used. (See p. 17.)

Do not overheat the baby by wrapping him up too warmly when he goes out. If he perspires too freely outdoors he may be chilled when he comes indoors and has his wraps removed.

PREVENTION OF TUBERCULOSIS

Tuberculosis is a very serious and often fatal disease in infancy. Babies get tuberculosis by being near a person who has tuberculosis or by drinking unboiled or unpasteurized milk from tuberculous cows. (See section on how clean cow's milk is produced, p. 63.) To keep a baby from getting tuberculosis keep him away from anyone who has the disease, even if it is his mother or his father or some other relative, and from anyone who has a cough. See that he drinks no cow's or goat's milk that has not been boiled.

A tuberculous person may infect an infant directly through germs in the droplets of spray which he breathes or coughs out, and for this reason a baby should not live in the house with a person suffering from active tuberculosis. The germs may be present on the floor or in rugs and may infect the baby when he creeps. If any member of the household has the disease, either the baby or the patient should be removed from the home. If the mother has active tuberculosis when the baby is born, the baby should be taken away from her at once. She should neither nurse him nor take care of him. Babies should be kept away from any person who has a chronic cough, since frequently such a cough is due to tuberculosis, whether recognized or not. Many mothers who do not know that tuberculosis may occur in old persons fail to keep the baby away from an old person with a cough.

PROTECTION AGAINST SMALLPOX

Every baby should be vaccinated against smallpox before he is 12 months old. This should be done whether there is any smallpox in the community or not, as exposure to smallpox may occur when least expected.

PROTECTION AGAINST DIPHTHERIA

Every baby should be protected against diphtheria. Immunization should be started when he is 9 months old. This is done by the injection of three doses of toxoid 1 to 4 weeks apart. Six months after the last dose the baby should be given a Schick test to see whether the treatment has protected him against the disease. One year later the Schick test should be repeated. In the majority of cases the test shows that the baby has been protected, but in a few the test will show that he needs to have the injections repeated. Be sure to have the two Schick tests done in order to be certain that your baby is protected. Some doctors may advise repeating the Schick test every year or so.

PREVENTION OF WHOOPING COUGH

Whooping cough is a serious disease in a baby under 1 year. If a baby is exposed to whooping cough your doctor may advise giving a vaccine. Many physicians believe that the vaccine may make the disease less severe when it develops.

PREVENTION OF MEASLES

Measles is a serious disease in a baby or a very young child, and it is often wise to try to make the attack less severe. If within a week after exposure to measles some blood serum from a person who has recovered from measles or some immune globulin (placental extract) is injected into the muscles of the back or the thigh the disease will usually be made less severe. If the inoculation is given in the first 4 days after known exposure, the disease may be prevented for the time being but not permanently. The doctor should be consulted with regard to this.

Do not allow the baby to be exposed to measles (or any other disease) with the idea that "he is sure to get it some time." It is wise to ward it off as long as possible, for the younger the child the more serious the disease is likely to be. If you know that the baby has been exposed to measles, consult your doctor immediately.

PREVENTION OF OPHTHALMIA NEONATORUM

Ophthalmia neonatorum (infection of newborn babies' eyes) may be prevented by putting 2 drops of 1-percent silver-nitrate solution into each of the baby's eyes immediately after birth. This will be done by the doctor or the nurse.

PREVENTION OF CONGENITAL SYPHILIS

Congenital syphilis is a preventable disease. With proper examination and treatment of the mother before and during her pregnancy congenital syphilis would be entirely done away with. Every mother should have a blood test for syphilis as soon as she knows that she is pregnant. If there is no clinic or laboratory in her community the doctor can send a sample of the mother's blood to the laboratory of the State department of health. If the test shows that she has syphilis, intensive treatment for the disease should be begun at once and continued under the direction of her doctor or a clinic throughout her pregnancy. If she is not treated it is likely that she will have a miscarriage or that the baby will be born either dead or diseased. If the mother is known to have or to have had syphilis, regardless of whether she has been treated, it is important to have a Wassermann or Kahn test of the baby's blood made when he is about 2 or 3 months old, even if he appears healthy.

HOW TO PREVENT ACCIDENTS

A baby should never be left in the house alone. Reports are heard only too often of babies who were smothered or burned while the mother was out of the house. Do not leave a baby alone while you go to the store or to a neighbor's, and do not leave him with only small brothers or sisters to take care of him. When he is sleeping the baby should be alone in his room or on the porch, but the mother should look at him from time to time, to see that all is well. When a baby is taken out in a baby carriage he should always have an adult to take care of him, not a young child. He should never be left alone for a moment in the bathtub.

Special precautions should be taken to prevent smothering. Babies have been smothered when in bed with an older person who, while sleeping, rolled onto the baby or pulled the covers over him. A baby should have a bed of his own. Sometimes a baby is smothered when his head becomes buried in a feather pillow. He does not need any pillow, and the mattress on which he sleeps should be firm. (See Bed, p. 19.)

Straps for keeping the baby in bed and drawstrings at the neck of sleeping bags and outdoor garments have caused choking as a result of their getting twisted and tight around the baby's neck. Small toys, beads, coins, pins, and other small objects should be kept away from the baby, because he might choke on them. (See Toys, p. 37.)

If the baby is to be kept safe everyone in the family should be careful that nothing is brought near him that might injure him in any way. The other children in the household should be trained to keep scissors and knives out of the baby's reach, and the younger ones should be trained to let matches alone, for their own safety and the baby's.

A play pen (see p. 37) will keep the baby away from many dangers.

Never use a baby powder containing stearate of zinc, because if stearate of zinc is inhaled, a serious and often fatal form of pneumonia develops. Never give a baby a can of baby powder as a plaything, even one that is apparently empty. If he puts the top in his mouth he may inhale the powder.

So that the baby will not be scratched, the mother should see that her fingernails and the baby's are short and smooth, and also that there are no unprotected pins or needles in her clothing or anywhere near the baby.

BURNS

To prevent burns, which are far too common among babies, take every care, first, to prevent accidental fires in the house (see below), and secondly, to keep the baby away from such dangerous things as heaters, kettles of boiling water, hot soup and hot coffee, and flames of all kinds. Older babies frequently are burned as a result of pulling at tablecloths and overturning hot coffee or soup.

POISONINGS

Keep all bottles of medicines or boxes of pills on high shelves or in cupboards well out of the baby's reach. Do not leave the bottle of iodine on the washstand or the table. A baby who chews painted toys or a painted crib or other furniture may get lead poisoning. If such things are painted, only paint which contains no lead should be used.

Always keep poisons, as well as medicines, on high shelves out of the baby's reach. Never leave a can of lye or one of kerosene on the floor or in any place where a creeping child might get hold of it. Lye causes a type of burn in the mouth and throat that may cause death.

To avoid gas poisoning, be sure that gas fixtures do not leak and that any gas flame which might be blown out accidentally is not left burning. When gas is burning in a room see that the room is very well ventilated. Never leave a baby alone in the room with a gas heater.

FIRES

Whether or not the house can be reached easily by a public fire department, fire precautions should be the rule in every family. Fire-resistant construction is the best defense, but much can be done in an ordinary house to prevent fires.

The chief causes of home fires are careless use of matches and cigarettes, careless burning of refuse, and use of defective stoves and chimneys. Use metal containers for matches, trash, and ashes. Have stoves and chimneys inspected regularly. See that heating equipment of any kind is properly installed and cared for.

If gas is used, have metal pipe connections rather than flexible tubing. Do not place a gas stove or heater near a curtain. Have electric appliances inspected regularly by an electrician.

Do not allow rubbish to accumulate, and destroy as soon as possible all cloths and papers used in cleaning with oil or wax, for a pile of such cloths or papers is likely to take fire of itself.

Have at least one fire extinguisher and have it charged once a year.

See that all stairways and doors are kept clear all the time, so that they can be used as exits in case of fire.

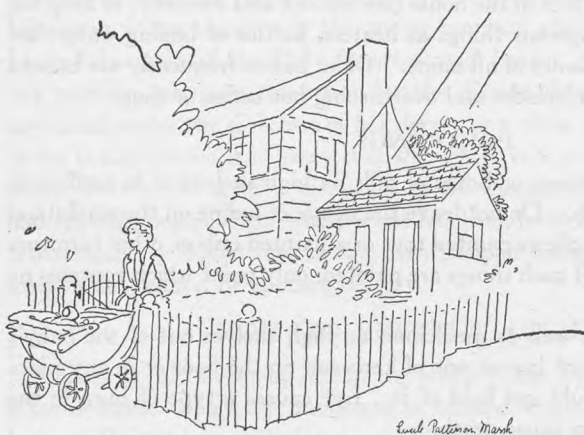
The Home

A HOUSE FOR THE CHILD

THE HOUSE that is to be the home of children should be chosen so that some of the rooms will be sunny. If possible there should be a yard or porch where the children may play and where the baby may have sun baths. Plumbing and heating devices, drainage, and other conveniences should be in good repair; the cellar should be dry; there should be no breeding place for flies and mosquitoes near the

house, such as manure piles, open privies, or open water barrels. All doors and windows should be screened.

The water supply, if a well or spring, should be so located as to prevent the water from being polluted by bacteria or drainage from barns, stables, cesspools, or outhouses. The most satisfactory method of avoiding the possibility of water pollution



A cottage in the suburbs is a good place for the baby

is to make certain that the cesspool or outhouse is on a lower level than the well or water supply. In no case should a cesspool or outhouse be closer to a well than 50 feet.

THE BABY'S ROOM

Whenever possible the baby should have a room to himself. It is hard to give him the quiet he should have in a room that must be used also by other members of the family. A room which is bright and sunny for most of the day should be chosen for the nursery.

TEMPERATURE

In order that the baby may be covered properly at night and dressed suitably during the daytime, the temperature of his room should be known. A thermometer should be hung on an inside wall at the level of the crib—about 3 feet from the floor. Do not put it near the register or the radiator. The baby's clothing and covering should be adjusted to the temperature of the room, which should be kept even.

A very young baby, or a delicate one, requires a warmer room than an older or more robust baby. For the first weeks of the baby's life the temperature of the room should be kept between 70° and 75° F. day and night. For older and for stronger babies the day temperature may be from 68° to 70° F., and the night from 55° to 60° F. A baby should be protected by screens against drafts

of cold air. The temperature and moisture of the room should be kept as even as possible.

Oil or electric heaters are convenient to give quick temporary heat. A gas heater should not be used in a baby's room unless there is no other method of quick heating. It is likely to leak and give off poisonous fumes that are very dangerous; a slight leak day after day may make anyone exposed to it very ill.

In summer, when it is very hot, the baby should be kept in the coolest part of the house or porch, and he should wear only the lightest clothing, such as a sleeveless shirt and a diaper or just a diaper.

Electric fans may be used in hot weather to keep the air in motion. They should be placed high enough to be out of reach and should be tilted so that the current of air is directed toward the ceiling. Fans with rubber blades are safer than those with metal blades.

* VENTILATION

The best way to ventilate the baby's room is to keep the window open. Most of the time the window may be left open at the top or at the bottom. Except in warm weather some method of shielding the baby from drafts should be used, such as a window board or a cloth window screen.

A window board is a piece of wood or glass, 10 or 12 inches high, resting on the window sill, slanting toward the inside of the room, and held in place by a triangular support at each end. The board turns the air upward and keeps it from cooling the lower part of the room too suddenly. By another plan the window is opened a few inches, at either the top or the bottom, and a board cut to fit the opening is inserted. This permits the air to enter through the space between the sashes at the middle of the window and distributes it so that it does not fall directly upon the head of the baby.

To make a cloth screen tack one or more thicknesses of cheesecloth on a wooden frame like that of an ordinary wire screen and insert in the open window. The cloth breaks up the air current and distributes it in various directions, thus preventing drafts. A narrow cloth screen a few inches wide may be inserted in an opening at the top of the window, thus making it possible to keep the window open most of the time even in very cold weather.

WALLS AND FLOORS

The baby's room should be kept scrupulously clean. If the family moves into an old house, the nursery should be freshly papered and painted.

A bare floor that is smooth is easily kept clean. If the floor is old, it may be covered with linoleum, which is easily cleaned. Hardwood floors are best, for they do not splinter, but a softwood floor painted or varnished will do. Heavy rugs and carpets are not suitable for a nursery, but washable rugs may be used. When the baby is old enough to sit on the floor to play, a folded blanket should be placed under him.

FURNISHINGS

Everything not actually needed for the care of the baby should be kept out of the nursery. Furnishings should be washed often with soap and water and exposed to sunshine and open air. For cribs and play pens it is well to use paint not containing lead, as a baby may bite the railing and swallow paint and if it contains lead he may be poisoned.

The following articles should be provided for the baby's room:

- Bed or crib and bedclothes.
- Mosquito netting to cover entire bed (if windows are unscreened).
- Bureau or chest of drawers for clothing.
- Bed or couch for nurse or mother, so that she can sleep in the same room if the baby is sick.
- Wall thermometer.
- Low chair for the mother.
- Folding or stationary table on which to bathe and dress the baby.
- Bathing equipment. (See p. 25.)
- Toilet equipment (kept in bathroom if possible):
 - Covered enameled-ware pail (2-gallon size) for diapers.
 - Small enameled-ware chamber.
 - Covered soiled-clothes hamper.
 - Painted nursery toilet chair or for the older baby a small toilet seat with back and sides, which can be firmly fastened on the regular toilet, with a safety strap that goes around the baby's hips, and a footrest.

Other useful articles are:

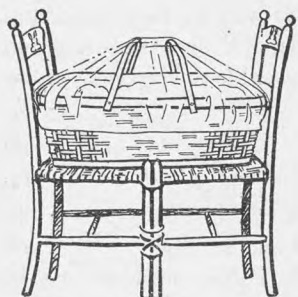
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| Clothes rack. | Bath thermometer. |
| Balance scales on table. | Little chair and table. |
| Screen. | Hinged gate for top of stairway. |
| Nursery ice box. | |

Bed.

The first requisite is to have a separate bed for the baby. The first bed may be a bassinet, a large flat clothes basket, or even a wooden box. Several thicknesses of quilted cotton padding or a cotton blanket may be used as a mattress; it must be clean, flat, and smooth. The basket or box should stand on a table or on two chairs placed with seats together so that the front legs can be tied. It should never be left on the floor while the baby is in it.

A larger bed will be needed as soon as the baby tries to sit up, so that it is just as well to start with the crib and a firm mattress that does not sag and enables the baby to lie perfectly flat. The bed should be large enough to permit him to turn over, stretch his arms and legs, and kick freely. If the crib side lets down, the catch that fastens it should be well out of reach of the child. The crib bars should be fairly close together, so that the baby cannot get his head between them. It is well to pad the ends and sides, particularly if the crib is metal.

To make the baby's bed, cover the middle section or all of the mattress with



oilcloth or soft rubber sheeting, with a strong tape sewed to each corner. Tie these tapes together under the mattress to hold the rubber cover smooth. (Or the rubber cover may be made like a pillowcase, covering the mattress entirely.) Over this place a cotton pad. Cover this with a sheet, which should be tucked under the mattress on all four sides, so that the bed is perfectly smooth. If a sleeping bag is used no other covers are needed, except in cold weather, when extra blankets may be added. For weather when sleeping bags are too warm, lightweight wool blankets should be provided. Such blankets are much warmer than heavy cotton ones. In very hot weather no covering is necessary, not even a top sheet. The bed may have a dimity or seersucker spread, which is easily washed and requires no ironing. Do not use a heavy spread.

It is better not to use a pillow, as the baby will lie more nearly flat without one. A clean folded cloth, which can be changed easily, may be placed under his head.

A combination bed and play pen, with a bedspring and a mattress, may be used for a young baby. Such a bed usually is covered with wire netting on all four sides, the bottom, and the top, to keep out insects; the top opens like the cover of a box. The top should have an automatic lock so that, when the baby begins to stand up, he cannot raise it with his head and possibly injure himself. This bed may be fitted with casters or wheels so that it can be moved readily from place to place. After the baby is 6 or 7 months old, a larger bed with high sides and firm mattress should be provided so that the baby can sit up or stand.

Dressing table.

A table on which to change the baby's diaper and to bathe and dress him is a great help. It should have a smooth enameled top or be covered with oilcloth so that it may be scrubbed. A soft pad should be put under the baby.

Clothes rack.

A small clothes rack is convenient for use while the baby is being dressed and undressed.

Baby carriage.

The choice of a baby carriage is very important. It should be at least 2 feet from the ground. It should be large enough for the baby, with the necessary wrappings, either lying full length or sitting up. Its cover should be adjustable, to protect him from wind. It should have strong, well-balanced springs and should stand squarely on four wheels. It should be used as a bed only if absolutely necessary and only for the little baby. If it is to be used for the little baby's outdoor naps, it should have a good full-length mattress that will lie flat. As a baby is more cramped in a carriage than in a bed, he should be turned once or twice during every nap. He should not be sent out in a carriage in charge of a child or other person not able to judge of his comfort. The carriage should be covered with a net to keep out flies or mosquitoes.

For the baby that is old enough to sit up, a small mattress should be used as a seat. A safety strap that fastens about his waist gives greater protection than the ordinary carriage strap.

Clothes

CLOTHING should be simple, washable, and adapted to the climate and season, the temperature of the house, and the baby's age and condition. In hot climates and those in which the range in temperature is nearly constant night and day for most of the year, the dressing of an infant is a simple matter. In parts of the country where seasonal and even daily variations in temperature are considerable and sudden—conditions found over the greater part of the United States—the proper dressing of the baby requires considerable thought and judgment. The baby should be dressed lightly in warm weather in summer. In the hottest weather only a sleeveless shirt and a diaper need be worn, or just a diaper. In cold weather the clothes should be warmer—a long-sleeved shirt, petticoat, dress, stockings, and if the house is not well heated, a sweater.

If the house is well heated it is important not to dress the baby too warmly when inside the house. If a baby perspires so that his body is moist he is too warmly dressed. If he is too warmly dressed while out of doors so that he perspires, his damp clothes may cause him to be chilled when he comes indoors.

Be sure that the baby's hands, feet, and ears are warmly covered when he is outdoors in cold weather. Very small and feeble babies who lie very still most of the time must be closely watched to be sure that they are warm enough. Robust and active babies, on the other hand, are easily dressed too warmly.

The clothing should consist of as few pieces as possible. The following list gives the clothing necessary for the average baby:

Sleeveless shirts.....	2-4
Long-sleeved shirts.....	2-4
Dresses.....	3-4
Sweaters.....	2
Diapers.....dozens..	3-4
Stockings.....pairs..	4
Nightgowns.....	2-3
Petticoats or slips.....	3-4
Coat and cap, thin.....	1
Coat and cap, heavy.....	1
Flannel squares (outdoor wraps for new-born) 36 by 36 inches.....	2-3

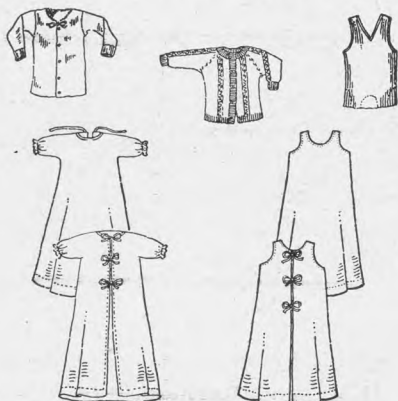
Pins are used for the diapers, but buttons or tapes are better for fastening the other garments.

Babies' undergarments may be of cotton, of wool and cotton, of wool and silk, or of silk. Rayon, alone or combined with cotton or wool, is being used

more and more. All-cotton garments are used widely. In very cold climates, or for very young or weak babies, the shirts may be at least part wool unless wool irritates the skin.

If garments are bought ready-made, size 2 should be selected, as size 1 will be outgrown soon. If they are made at home they should be made large enough at the start to fit the baby for a few months. They do not need to be longer than to cover the feet—20 to 24 inches.

No garment should have trimming that can scratch or irritate the baby's tender skin, nor should any garment be starched.



DIAPERS

Diapers should be soft, absorbent, light in weight, and not bulky. (Bulky diapers may cause thigh deformities.) They should be made of material which is easy to wash and which dries quickly.

Diapers of cotton bird's-eye cloth are satisfactory in these respects. If the edges are pinked instead of hemmed, the diaper is less bulky and also is easier to wash.

Several types of satisfactory diapers are on the market, such as a diaper made of two layers of soft, fine-meshed, gauze-like cotton material, finished without hems, woven together at all the edges.

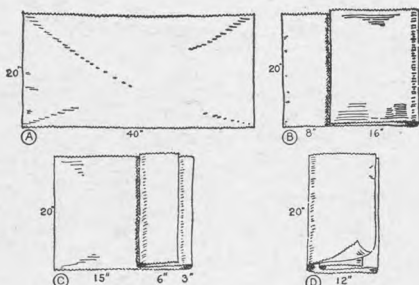
Many mothers put pieces of old cotton goods or absorbent paper inside the diaper to catch the stool.

The shape of the diaper depends largely upon the mother's preference. Some choose square diapers, some oblong. The size depends partly upon the size of the baby; a diaper that is too large for the baby is bunched and uncomfortable. Many square diapers are 27 inches each way (after shrinking); others are smaller. Oblong diapers are usually 20 by 40 inches.

HOW TO FOLD AND PUT ON THE DIAPER

If the diaper is square, fold it triple thickness. Then fold one end back about one-third, so as to make a pad of six layers of cloth. For a girl baby this six-layer pad is to go behind the baby; for a boy baby, in front. The part that is to pass through the legs is only three layers thick. Lay the baby on the folded diaper (the turned-back flap may be either on the inside or on the outside). Draw the other end up between the baby's legs, over the abdomen, and pin the front and back of the diaper together at each side at the waistline with safety pins, keeping your hand between the baby's body and the point of the pin. The pins should be placed crosswise and should pass through both shirt and diaper. The back fold of the diaper should overlap the front. Pin the front and the back of the diaper together at each knee.

If the diaper is oblong, it may be folded to form a center panel of extra thickness. (See illustration, A, B, C, D.) To form this panel, using a 20- by 40-inch diaper (A), fold the diaper crosswise, bringing one end to about 8 inches from the other (B). The folded diaper will then be 20 by 24 inches. Turn back the same end to about 3 inches from the fold (C). Bring the other end of the diaper over to the first fold. The diaper is then 12 by 20 inches, with a panel about 6 inches wide in the center (D). It may then be pinned on like a square diaper, except that there is no flap.



Care should be taken not to hamper the free movements of the baby's body or legs by pinning the diaper too tightly.

CARE OF DIAPERS

The diaper should be changed as often as it is wet or soiled. At night it should be changed when the baby is taken up to be fed. (See Toilet habits, p. 41.) Used diapers should be washed at least once a day. No diaper should be used a second time before being washed. Used diapers should never be left lying about the room nor dried on radiators.

Wet diapers should be placed at once in a covered pail and left to soak in cold water until they can be washed.

Diapers soiled with stool should be held over the toilet and shaken, brushed, or scraped so that as much stool as possible may be removed. If the family has a toilet that flushes, the diaper may be held by one end inside the toilet and the toilet flushed so that the water flows over the diaper. When only a stain is left, the soiled diaper should be placed in a covered pail containing a solution of borax (1 tablespoonful to 2 gallons of water).

All the diapers should be washed in very hot water with plenty of mild, unmedicated soap, with no washing powder or strong soap. They should be rinsed through four waters to be sure that all the soap is rinsed out and *then they should be boiled 10 to 20 minutes*. Much of the irritation of thighs and buttocks from which babies suffer severely is caused by not rinsing diapers enough or by not boiling them after rinsing. Diapers should be dried in sunshine and open air. If shaken and pulled into shape they need not be ironed.

RUBBER "BABY PANTS"

Rubber pants are bad for the baby's skin, as they prevent evaporation of moisture and also cause extra sweating; they become wet with perspiration and irritate the skin. They should be worn only occasionally, such as during a journey. During the journey the diaper should be changed when wet or soiled.

BANDS AND SHIRTS

The baby's first band is usually a strip of gauze or soft flannel 6 inches wide and 18 to 20 inches long. Its only purpose is to hold the navel dressing in place. The

band should never be tight enough to bind. The abdominal muscles of a healthy baby need little support; rather they need free play in order to be strengthened.

A sleeveless shirt may be substituted for the band as soon as the navel has healed. If the navel dressing is held with surgical-gauze bandages the sleeveless shirt may be used from the start.

During cold weather a shirt with sleeves is usually worn over the sleeveless shirt. It should open all the way down the front and should be large enough so that the sleeves will slip on and off easily.

STOCKINGS

The little baby does not need stockings in warm weather nor in a well-heated house. In cold weather and indoors when the house is not well heated stockings should be worn—cotton or wool depending on the climate. When the baby begins to sit up, crawl about, and try to stand up, stockings protect the feet from rough surfaces and help to keep them warm. Stockings, after washing, should be one-half inch longer than the baby's foot, and therefore to allow for shrinking it is wise to buy them at least three-fourths of an inch longer.

Woolen stockings should be washed quickly and dried on stocking stretchers to prevent them from shrinking. A loop of tape may be sewed to the top of each stocking, through which to slip the safety pin that holds it to the diaper.

SHOES

When the baby begins to stand and walk he will need shoes for protection (not for support). After he begins to stand he should not wear soft shoes such as moccasins, which have the sole and the upper cut in one piece. The soles of his shoes should be firm but moderately flexible; the shanks should not be stiff. Soles should be shaped like the natural outline of the foot, straight along the inner line. They should be made of rough leather such as elk so as not to be slippery. They should be reasonably thick for protection and good wearing qualities. Heels are not advisable, as they limit the range of motion of the ankle joint.

Shoes should always be long enough, wide enough, and deep enough (at the toe) not to crowd the baby's toes. Before buying shoes for a baby old enough to stand, make a tracing of his foot as he stands on a paper. Shoes when purchased should be about a half-inch longer than the baby's foot and at least one-fourth inch wider at the toes. Notice the thickness of the baby's toes and see that the shoes provide ample space for them up and down. This is very important; sometimes shoes are correct in shape of sole and in length and width but are not high enough at the toe. Check the fit of the shoe carefully and frequently to see that the toes are not crowded as the feet grow. As soon as the baby's toes come within one-fourth of an inch of the end of the shoes, longer ones should be bought.

The heel of the shoe should be narrow enough to fit snugly; this will prevent rubbing and help to hold the foot in place in the shoe. If the child's heel is very narrow, fitted pieces of chamois may be glued on the counter of the shoe.

Low shoes give greater freedom for the ankle muscles; they should be of the type, such as the laced oxford, that will fit closely around the instep. High shoes are necessary if the child persists in taking off his low shoes.

The best leathers for a baby's shoes are soft, pliable calf, elk, or kid. Patent-leather shoes should not be worn by babies since they are finished with a varnish that prevents evaporation of the natural moisture from the feet.

Parents should examine the children's feet frequently to see whether there is a "pressure spot"; that is, a pink or red area possibly due to pressure from the shoes. The wearing of proper shoes from the beginning may prevent crooked toes, which may later overlap or turn under. If trouble develops and does not clear up with different shoes consult a physician.

When the doctor gives the baby a health examination (see p. 10) ask him whether the baby's shoes are the right style and size.

DRESSES AND SLIPS OR PETTICOATS

Dresses may be made of fine white cotton materials such as nainsook, longcloth, batiste, or crinkle crepe, or of pongee or other silk. The dress can be worn without a petticoat except when one is needed for warmth. Dresses and petticoats, especially those used in the first few weeks, should open all the way down; they are easier to put on and easier to launder, and can be folded from under the baby when he is in bed. Flannel petticoats are necessary only in extremely cold weather. After the baby begins to creep or stand, skirts are in his way and rompers, creepers, or play suits should be provided.

NIGHT CLOTHING

Any soft material may be used for nightgowns, such as cotton or part-wool flannel, or single stockinet—or in warm weather thin white cotton goods such as batiste. In hot weather a nightgown is unnecessary.

Winter nightgowns for a very young baby may be made with a drawstring though the hem at the bottom, but they must be long enough to come well below the feet so as to permit him to kick freely.

COATS, SWEATERS, AND CAPS

The extra clothing that a baby needs outdoors depends on the weather and on his age and vigor. For a very young baby a square of blanketing may be used as an outdoor wrap.

In parts of the country where the weather may be cold one day and mild the next the baby's clothes should be adjusted accordingly. It is therefore wise to have a sweater for a light extra wrap, indoors or outdoors.

The baby should have also a lightweight flannel coat for spring and fall and a heavy coat of warm woolen material, with or without a thick interlining of wool, for winter. An older baby may wear a knitted woolen suit in cold weather, but he may need a coat over it to keep out the wind.

A warm woolen cap or hood should be worn in winter. In warm weather a soft muslin or silk cap may be used, or, if it is warm enough, none at all. On hot days the baby's head should be protected from the sun.

Baths

BATHE the baby every day unless your doctor gives other directions.

When bathing and dressing the baby do everything gently and quickly so as not to tire him too much. Having everything ready beforehand helps in giving the bath quickly and with comfort for both mother and baby.

While the baby is undressed examine every part of his body; if anything seems wrong, tell the doctor. (For care of mouth, eyes, ears, nose, and genitals, see p. 29.)

Bathe the baby before feeding him. He should not be bathed within an hour after feeding. Give the bath at about the same time every day. Many mothers like to give the bath before the 10 a. m. feeding, after the baby's bowels have moved; others, just before putting the baby to bed. In hot weather it may make the baby more comfortable to bathe him both morning and afternoon.

The following equipment will be needed for the baby's bath:

Tub—tin, enameled ware, or rubber (a rubber tub should not be used if the inside becomes rough). The tub may be folding or stationary.

Tray or box about 12 by 15 inches, for such things as—

Four covered glass jars, 6- to 8-ounce size, for absorbent cotton balls, oil, boiled water; and four nipples (for water).

Two nursing bottles (for water), with rubber caps

Small flat dish for oil.

Soap and soap dish with cover. (Mild, unmedicated soap is best.)

Soap to use as pincushion (any white soap).

Safetypins (two sizes).

Paper bags for waste.

Absorbent cotton (good grade).

Mineral oil or olive oil.

4 to 6 soft towels.

4 to 6 soft washcloths.

Bath aprons.

Bath blankets.

Bath towels for mother's lap or bath table.

The room should be comfortably warm—75° to 80° F.—and not drafty. (See p. 16.) If the room is drafty, the baby should be protected by a screen. (A sheet or blanket draped across two chairs or on a clotheshorse will serve as a screen.) It is not wise to have the room so warm that the baby perspires.

The method of preparing the baby for the bath and for giving the bath varies somewhat according to the age of the baby. (See pp. 26–27.)

Before beginning the bath have within reach everything needed, such as:

Tub on table or chair, according to mother's convenience.

Low chair without arms (if mother wishes to sit down).

Toilet tray, containing soap, absorbent cotton, oil, safetypins, and so forth. (See above.)

Washcloth, bath towels, bath blanket, and clean clothes.

Diaper pail (under the table may be a convenient place).

Newspaper spread on floor, for clothing taken off baby.

It is a good idea for the mother to wear a rubber apron to protect her clothes and over it an apron made of soft material such as outing flannel or bath toweling to protect the baby.

Half fill the tub with water at a little above body temperature (about 105° F.). Test the temperature of the water by dipping your elbow into it or with a bath thermometer if you have one.

The mother should wash her hands with soap and hot water and dry them just before picking up the baby.

While being gotten ready for the tub the baby may be placed on the table or held in the mother's lap, whichever seems more convenient. Some mothers believe that the lap bath gives the mother more rest, exposes the baby less, and is safer for the baby because in case the mother is called away she will carry him with her instead of leaving him alone on the table. Others believe that it is easier to do all the necessary things when the baby is on the table and that he can be handled more quickly and skillfully. Some mothers prefer to use the table only when the baby is being dipped into the tub and to sit down while undressing and dressing him.

If a table bath is given, the table should be at a height convenient for the mother so that she can stand at the table and bathe the baby easily. It should be large enough to provide space for the tub and the toilet tray, as well as for dressing the baby. The table should be placed against the wall and with the tub at one end and the toilet tray at the other. The space between them is used for dressing the baby.

The part of the table on which the baby is to lie should be covered with a piece of rubber sheeting, and a soft bath towel, folded, should be placed on this for the baby to lie on.

If a lap bath is given, the mother should sit on a low comfortable chair. The necessary equipment, including the tub, may be conveniently arranged on chairs or a low table so that she does not need to stand at all during the baby's bath.

During the baby's first 2 weeks of life a sponge bath instead of a tub bath is usually given, because the baby's navel is not yet healed and a tub bath would wet the dressing. (To give a sponge bath, wash the baby as described below but rinse the soapy water away by wiping him with a washcloth dipped in clear water instead of dipping him into the tub.)

While the baby is very young (under 1 month) it is important that he be kept warm and that he be uncovered as little as possible. The bath can be given step by step, with the baby always partly dressed or under a bath towel, so that the only time he is entirely uncovered is when you are putting him into the tub and taking him out again.

When bathing a baby younger than 1 month, loosen the neck of the dress, then wash his face with water but without soap, using a small soft washcloth. Lather his scalp thoroughly with your hand; then, holding the baby up with his head over the side of the tub, dip the washcloth into the water and rinse the scalp quickly. In this way the head is easily washed without getting soap into the eyes. Use the

towel gently to dry the face and head. Do not be afraid to wash the top of the baby's head thoroughly.

Next remove the diaper; and if the buttocks are soiled, cleanse them with cotton dipped in oil.

Next undress the baby and cover him lightly with a bath blanket or a towel. Then go over his entire body with your soapy hand. (A soapy washcloth may be used if preferred.) Little soap is needed. Be sure to wash the creases in his neck and arms, between his fingers, between his toes, and in each groin. Then place him in the tub, supporting his head and shoulders on your left wrist and forearm and holding him securely, your left hand grasping his left arm at the shoulder, your left arm resting on the side of the tub. Lift the feet and legs with your right hand. Gently lower him into the tub, placing first his feet and then his body in the water. Go over his body with the washcloth, this time not soaped; then lift him out and wrap him at once in a towel. It is very important that the skin be thoroughly rinsed so that all the soapy water is washed away.

Dry the baby carefully with soft, warm towels, patting his skin gently. After the skin is well dried, a little powder or mineral oil may be used in the creases and folds of the skin, under the arms, and on the buttocks. Wipe off excess powder or oil with absorbent cotton. Do not powder between the folds of a girl baby's genitals. Do not use too much powder, as it may cake and cause irritation. If the baby tends to chafe or have a "diaper rash," oil is better than powder as it protects the skin from urine and stool.

Usually babies enjoy their baths, especially if nothing unpleasant has occurred during the bath, such as being in water that is too hot or not being supported firmly. When putting the young baby into the tub hold him firmly, and until he is able to sit up steadily by himself hold him firmly all the time he is in the tub. A folded bath towel put on the bottom of the tub will make it more comfortable for the baby.

After the baby is about a month old, if he is vigorous and if the room is warm, take off all his clothes when you are ready to bathe him and let him kick and play for a while before the bath. He may then be soaped and rinsed as the younger baby is, except that he need not be kept covered so much.

When the baby is old enough to sit up (usually after he is 8 months old) he may be put into the tub for his bath without being soaped first.

For the older baby, toys that float may help him to enjoy his bath. If a baby is unwilling to be put into the tub, do not force him but let him sit by the tub and play over the side of it with the water and soap and floating toys. Force or harshness is worse than useless in the training of a baby.

SAFETY FOR THE BABY DURING HIS BATH

Never add hot water to the bath while the baby is in the tub.

Never put the baby into the bath while the tub is standing on a stove or a heater; he might be seriously burned in this way.

Never bathe a baby close to a stove.

Never leave a young baby alone in the tub.

The Teeth and Special Organs

TEETH

THE development of the teeth begins at least 6 months before birth. It is probable that the proper foods in the diet of the prospective mother help to lay the foundation for healthy teeth in the baby and that lack of proper food will affect the condition of her own and the baby's teeth. After the baby is born, in order that the teeth may continue to develop normally, it is of utmost importance that he himself receive the best diet possible, namely, his mother's milk. The material of which the teeth are built depends largely upon the nourishment of the body.

The child's first set of teeth are the 20 deciduous, or "milk" teeth. Most of them come through the gums during the first 2 years and are replaced, beginning at about the sixth year, with the second or permanent teeth.

At birth every tiny tooth of both sets has already begun to form; nearly all the first set are already partly or wholly hardened. As the baby grows, the teeth grow also; and if the baby is healthy they are ready to cut through the gums, beginning at about the sixth or seventh month of life.

Teething is a normal process which continues from about the age of 6 months to 2½ years. While a tooth is coming through the gum the baby may be irritable or fretful and may not eat well, but teething alone rarely accounts for illness. If, during the period from 6 to 18 months when the first 12 teeth are coming through, the baby is feverish or sick, a doctor should be consulted. The illness should not be attributed to "teething" until all other possible causes such as colds, abscess in the ear, and other diseases have been ruled out by the doctor.

By the time a baby is 1 year old he may have 6 front teeth. The mother need not be alarmed if her baby does not follow the average given here; but if he has no teeth at the end of the first year the doctor should be consulted. The diet may be at fault, or some disease may be retarding the baby's growth. Racial and family traits account for some of the differences.

The first teeth should be cleansed gently each day with a small soft brush.

If the child is to have good permanent teeth—straight, strong, and regular, with the upper and lower sets meeting to form a good chewing machine—his baby teeth must be kept in good condition. The permanent teeth come in from the sixth to the tenth year. Until then the child needs his baby teeth to chew his food and to hold the jaws in shape so that the permanent teeth will have plenty of room. Exercise in biting and chewing helps to develop strong, healthy teeth and jaws. There is often a tendency to keep a baby too long on soft diet. When he is about 8 months old begin giving him some dry, hard toast at the end of a feeding but watch him carefully until he learns how to eat hard food.

The child's gums should be smooth, firm, and a light pink in color.

MOUTH AND NOSE

The inside of a baby's mouth should never be cleaned unless the doctor orders it. The saliva is a cleansing fluid, intended to keep the mouth healthy. It is possible to injure the delicate membrane of the mouth by attempting to clean it with a cloth. If the membrane is injured a disease called thrush may develop. (See p. 96.) A drink of water after feedings will help to keep the mouth clean.

Do not clean the inside of the baby's nose unless he has a cold. (See Colds, p. 96.)

EYES

If during the first few days of life the eyes and lids are somewhat red this may be due to irritation from the drops of silver nitrate put in at birth. The doctor may advise washing the eyes during this time with a weak boric-acid solution dropped on the lower lids with a medicine dropper. In most infants all that is necessary is to wipe the corners of the eyes with a piece of cotton moistened with plain tepid water. No other washing of the eyelids is necessary. In bathing the baby take care not to allow any soapy water to enter his eyes. Swelling or redness of the eyelids or any discharge should have a doctor's attention at once.

The young baby's head should always be turned away from direct light, whether sunlight or artificial light, and his eyes should be shielded from dust and wind. (See p. 14 for care of newborn baby's eyes and p. 33 for sunlight.)

EARS

Wash the outer portions of the baby's ears with a soft cloth, but never attempt to put any hard instrument inside the ear to clean it. Always dry the ears and the creases behind them very carefully.

GENITAL ORGANS

The genital organs in babies of both sexes should be kept scrupulously clean with as little handling as possible. Boys should be examined by a physician to see whether the penis is normal or whether adhesions are present between the foreskin and the glans which should be separated. The physician will decide whether circumcision is needed. Two or three times a week at bathing time or as often as is necessary for cleanliness, the foreskin should be drawn back until the raised edge of the glans (end of the penis) is visible and the organ then cleansed by wiping with cotton moistened with plain tepid water. If the mother finds it difficult to draw back the foreskin she should not attempt to do it until the doctor has shown her how.

The genitals of a girl baby should be washed carefully every day with cotton moistened with plain tepid water. Any swelling or redness of the parts, or a discharge, however slight, should be brought at once to the doctor's attention. Do not use talcum powder between the folds of the genitals.

Sleep

AMOUNT

THE BABY should have the best possible sleeping conditions so that the hours of sleep may be of the greatest value. He should always sleep in a bed by himself and whenever possible in a room by himself, where he need not be disturbed by the presence of other persons and where light, heat, and ventilation may be adjusted to his needs.

The mother should arrange the baby's schedule so that it will not conflict with preparations for the family supper. Until he is 2 years old the baby should be fed and in bed by 6 p. m. or as soon thereafter as his schedule calls for, and the sooner this schedule is arranged the easier it will be for the mother and the better for the baby.

Some parents are in the habit of taking the baby out with them in the evening to motion pictures or for an automobile ride. This should not be done. If the baby is taken out in the evening his habit of going to bed immediately after the 6 o'clock feeding is broken, he loses some part of the long unbroken sleep that he needs, and he is overstimulated by lights and noise. Furthermore, he is likely to be kept for an hour or more in a close, hot atmosphere and may be exposed to communicable disease. Babies should not be taken into crowds of any sort.

A very young baby should sleep from 20 to 22 hours out of the 24; during the second and third months, about 18 to 20 hours. When the baby is 6 months old he should sleep about 16 to 18 hours—12 hours at night with only one interruption for a feeding, 2 or 3 hours in the morning, and 1 or 2 hours in the afternoon. Babies vary in their need for sleep. Some require less than these amounts; some require more. The baby should be trained from birth to have his longest unbroken sleep at night. The long night sleep should be continued throughout childhood, but the daytime naps may be gradually shortened. At 1 year of age the baby may require one long nap and one short one during the day, but the short nap may be given up soon after. On cold or cool days at least one of the naps, if not both, may be taken out of doors if the sun is shining, with the baby protected from the wind. If the sun is not shining, both naps should be taken indoors. In the hottest weather the naps may be taken outdoors in the shade.

SLEEPING CONDITIONS

The conditions that make sleep refreshing to older persons help the baby's sleep also; namely, plenty of fresh air passing in a constant current through the room, no light shining in the eyes, quiet, a clean body, clean, comfortable clothing, a good bed, and suitable covering.

A baby should never be put to sleep in all his clothes. At bedtime and at naptime he should be undressed and his diaper should be changed and his nightgown put on. A sponging off with a washcloth wrung out of lukewarm water

before he goes to bed at night will add to his comfort; he should be carefully dried. He will sleep better both day and night if he is comfortable.

The baby should be taught to sleep through the ordinary household noises. It should not be necessary to walk on tiptoe and talk in whispers while he sleeps, but he should have a reasonably quiet place for his daytime naps as well as for his long night sleep.

He should be made comfortable, his covers adapted to the temperature of the room, the light put out, the window opened, the window shade raised to the level of the window sash, and the door shut.

The baby will then go to sleep if he is comfortable. If he cries he may be wet, too warm or too cold, or sick, and the mother should go to him and attend to his needs. He may cry to get attention, and the mother should soon learn to distinguish this cry from that of real discomfort or illness. Effort should be made to find the cause of the crying. If none can be found, the baby should not be picked up. Under these circumstances a little crying will not harm the well baby. He should never be taken up to "show off" to visitors. For the first few months he will get a feeding at 10 p. m. or 4 hours after his bedtime feeding, but after that he should not be taken up at night except for changing the diaper. (See *Sleeping habits*, p. 41.)

Never give the baby any sort of medicine to make him sleep. All soothing sirups and other similar preparations contain drugs that are bad for the baby, and many of them are exceedingly dangerous.

Never allow a baby to go to sleep with anything in his mouth. He should not be allowed to suck a pacifier, nor his fingers, nor even his bottle.

If the baby sleeps lightly, wakens often, and seems uncomfortable, he may have been overexcited from having been played with too vigorously or too much in the latter part of the day. All play from 4 o'clock on should be quiet (overstimulation is to be avoided at all times no matter what its source nor what the age of the baby). If the baby is restless he may be wet, or too warm, or too cold. Something may be scratching him. There may be wrinkles in the bed clothing. He may be lying in a cramped position. The band or the diaper may be too tight. He may have been overfed or may have had something unsuitable to eat or may be hungry or thirsty. The room may be too light, too noisy, or not sufficiently aired. The mother must not be overanxious about these details. Having made the baby comfortable, she should leave him to go to sleep by himself. She should not go back unless she thinks there is some real necessity to be attended to.

BEDCLOTHES IN COLD WEATHER

To keep a baby warm all night in cold weather and at the same time have sufficient fresh air is somewhat difficult. When the weather is moderately cold several lightweight wool blankets will be needed. The temperature in the room should not be below 55° F. If it is not possible to heat the room the baby should wear a shirt and stockings as well as a warm nightgown, and a soft, roomy sweater may be put on over the nightgown. When the baby is sleeping

out of doors in cold weather his hands should be covered, either by the sleeves of the sweater or nightgown or by mittens. A sleeping bag made of an all-wool blanket will help to keep him warm, but blankets will probably be needed also.

A hot-water bottle or a warmed bag of sand may be used to warm the bed before the baby is put in; but if it is left in the bed to keep his feet warm it must be well wrapped up and must be only warm, not hot, for the baby's flesh is delicate and is easily burned. Hot-water bottles must be carefully stoppered. Electric heating pads are not safe to leave in a baby's crib.

A nightcap may be needed in very cold weather; a wool stocking cap or a flannel hood, lined with cotton or silk and tied under the chin, may be used. A little cape sewed to the bottom of the cap will help to protect the neck in cold weather. This cape may be fastened to the sleeping bag at the neck.

IN WARM WEATHER

In warm weather the baby should be put to bed in very light clothes. On the hottest nights a diaper and a lightweight sleeveless shirt are enough or just a diaper. On nights a little cooler a thin nightgown and a lightweight blanket will be needed. The room should be made as cool as possible. An electric fan will keep the air in motion and thus relieve the worst of the heat. The fan should be arranged so that the current of air blows upward—toward the ceiling, not toward the baby.

If there is a sleeping porch on which the baby can be protected from the wind, his crib may be put on it when the weather is warm enough. Unless the porch is screened the crib should be covered with a netting to keep off flies and mosquitoes. When a baby is sleeping on a porch the mother must be on her guard against a sudden drop in temperature and be ready to put extra covering on him or to bring him indoors if necessary.

SLEEPING BAGS

After the baby is 5 or 6 months old, or whenever he cannot be depended upon to remain under his blankets all night, he should have a sleeping bag. For the winter the bag may be made of any woolen material, preferably a soft blanket (an old one will do). For ordinary summer nights a bag made of muslin or outing flannel may be used.

The simplest and best plan for making a sleeping bag for a young baby is to cut a slit in the middle of a blanket, wide enough to permit it to slip easily over the baby's head, and bind or stitch the cut edges. The blanket is slipped over the baby's head, smoothed down under and over him, and the lower corners folded toward the middle and fastened with safetypins. This makes it possible to change the baby's diaper without taking him out of the blanket.

Sleeping bags with drawstrings at the neck are dangerous and should not be used.

In the hottest weather the baby should not be put into a sleeping bag, as it prevents the air from circulating around him. A sheet may be put over him and pinned so that he will not kick it off, but it should be loose enough to allow him to turn freely. Even a sheet may be unnecessary on some hot nights.

Fresh Air and Sunshine

IT IS important to give infants and young children the benefit of fresh air and sunshine, since both are essential for health. Even very young infants—3 or 4 weeks old—can be put out of doors if the weather permits. In cold weather the young baby must not be out of doors unless he is in the sun. The older baby may be out in colder weather but care must be taken to keep the hands and feet warm. The sun must be shining and the infant must be protected from wind. In summer, care must be taken that he does not get too warm and that his skin is not burned from too much exposure to the sun. A slight reddening of the skin precedes tanning.

The heat of the sun is produced by certain long, or infrared, rays. The shortest, or ultraviolet, rays are the ones that give the baby power to utilize food so as to help build straight bones and a strong body. Slight reddening and tanning show that the baby is receiving benefit from the ultraviolet rays of the sun. Not all babies tan, even though exposed to the sun. It is well to give babies and young children sun baths for prevention of rickets and for other beneficial effects. A child needs sunlight most when he is growing fastest—in babyhood and early childhood.

The ultraviolet rays of the sun cannot pass through cloth (unless it is loosely woven or very thin) or ordinary window glass. Dust and moisture in the air weaken the effect of these rays. During the winter in the North Temperate Zone and in the far north the ultraviolet rays are weaker and are useful only during the short part of the day when the sun is overhead.

In most parts of the country direct sunlight cannot be relied upon as the only means of preventing rickets, and it should be supplemented by some source of vitamin D, such as cod-liver oil. Indeed it is only in the tropical and subtropical

parts of the country—Puerto Rico and parts of the South and Southwest, for example—that the sun gives to the growing child sufficient protection against rickets throughout the year. In all parts of the country, even in the warmer regions, it is well to give cod-liver oil, since it has food value in the form of an easily digestible fat and in addition contains vitamin D, the vitamin that prevents



rickets, and another vitamin (vitamin A) that is important for children's health. Giving cod-liver oil is especially important in winter in most parts of the country, where the baby cannot get enough direct sunlight to prevent rickets. In northern parts of the country it should be given throughout the year. (See Cod-liver oil, p. 57, and Prevention of rickets, p. 11.)

Artificial sunlight in addition to cod-liver oil may be considered desirable in rainy or very cold seasons for certain babies, especially for the premature. Sun lamps, ultraviolet or carbon-arc, may be used under the direction of a doctor. The same effect, however, can be obtained by giving sufficiently large doses of cod-liver oil or some other source of vitamin D (to be prescribed by the doctor).

HOW TO GIVE SUN BATHS

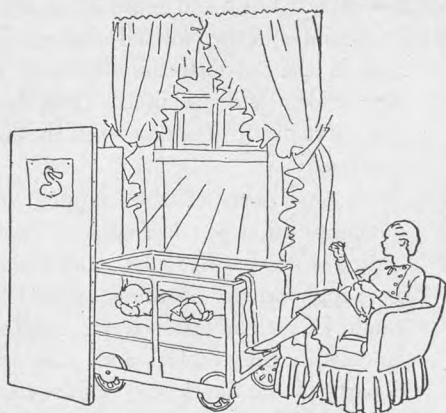
Sun baths may be given indoors beside an open window or out of doors.

In starting sun baths remember that a baby's skin is delicate and burns easily. Expose at first a small part of the body for a short time. If the baby is fair, with thin white skin, be even more cautious than with the darker-skinned baby.

A baby's eyes will not be injured by sunlight unless the rays enter the eyes directly. This occurs only when the eyes are turned toward the sun and are open. If the eyelids are closed or if the face is turned away from the sun no harm will be done. If the baby lies with his feet directed away from the sun and his head slightly raised, his eyes will be adequately protected from the direct rays by the shadow cast by forehead and eyelids. A baby that is old enough to sit up during the sun bath will protect his own eyes by turning and bending his head.

INDOOR SUN BATHS AT AN OPEN WINDOW

In the winter a sun bath can be given indoors at a window opened at top or bottom, the baby being placed in the patch of sunlight coming through the open space. If the room is heated and the doors closed to prevent drafts, the baby need not be completely wrapped up. First the face, then the hands, and later arms and legs can be exposed daily. If the sun is sufficiently warm even the baby's shirt may be taken off. Begin with 2 to 3 minutes' exposure back and front and increase the time 2 to 3 minutes a day, until the sun bath is given for an hour once or even twice a day. It is thus possible



to produce tanning in winter. The mother should sit beside the baby and watch him. If the sun goes behind a cloud the baby must be covered. By holding her own hands in the sun the mother can tell how warm it actually is.

OUTDOOR SUN BATHS

In some parts of the United States it is possible for babies to begin outdoor sun baths by the middle of March or the first of April, if the place chosen for the sun baths is protected from the wind. In southern parts of the country outdoor sun baths may be started earlier or even given the year around.

On the first sunny day in early spring the baby may be given an outdoor sun bath for a few minutes held in the mother's lap or in the carriage with the hood pushed well back. Each day thereafter the time of the sun bath should be increased by 2 to 3 minutes for a fair-skinned baby and 4 to 5 minutes for a darker-skinned baby. Every few days the amount of body surface exposed may be increased, at first slowly, but as the days grow warmer more rapidly. Later the shirt may be taken off and the sun bath given with the baby wearing only a diaper. Care must be taken not to burn the skin. The little baby should not be given a sun bath longer than 15 minutes on the front and 15 minutes on the back, and then only if the sun baths have been increased very gradually. Older babies may be given longer sun baths, but not more than half an hour twice a day.

If the baby has been getting direct sunlight through an open window and is used to the sun, the first outdoor sun bath may last longer than the 3 to 5 minutes that are allowed for a baby unused to exposure, and the time for later sun baths can be increased accordingly. Sun baths may be given by putting the baby in the sun twice a day, at first using half the required time at each period, later the full time.

In the winter sun baths should be given between 12 noon and 2 p. m., when the sun is warmest. In summer, on the hottest days, early in the morning and late in the afternoon are the best times. On the hottest days the time of exposure should be shortened.



Exercise and Play

THE normal baby exercises constantly when awake. At a very early age he moves his arms and legs about aimlessly; he closes and uncloses his hands, stretches himself, and turns his head and neck. He gets a good deal of his exercise by crying. Some crying every day does not hurt a baby but is good for him, as it expands his lungs thoroughly and stimulates vigorous use of his arms and legs. A baby should not be so wrapped about with clothing and blankets that he cannot move every part of the body freely. For this reason also, the baby should not be left in his chair or carriage for any length of time.



Baby can amuse himself in a play pen

The position of a little baby should be changed occasionally. Twice a day (at bathing time and at bedtime) every baby should be allowed to exercise for 10 minutes in a safe place, such as on a large bed, with the mother watching him, or on a blanket in a play pen, with almost all his clothes removed. He should be encouraged to kick and turn and, as he grows older, to crawl and pull himself about (but not to stand until he shows that he is ready).

A few minutes of gentle play now and then is good for the baby, and father as well as mother should play with him each day. However, all babies need a great deal of rest and quiet, and much of the usual kind of play is too exciting. It is a great pleasure to hear the baby laugh and crow; but often the tickling, punching, or tossing that produces the laughter makes him irritable and restless. Rocking him, jumping him up and down on one's knee, tossing him, and shaking his bed or carriage form bad habits, as they make him depend on attention. This does not mean that he should be let alone completely. For a few minutes before feeding he should be held quietly in his mother's arms—in several positions, so that no set of muscles may be tired. He is more likely to grow up happy and cheerful if those about him are happy and cheerful.

The morning is the best time for play. Play in the late afternoon should be quiet and gentle; otherwise the baby will be overexcited and his night rest may be disturbed. If two or three times a day are set aside for play he will learn to play then. Play periods should be very short when the baby is little. He should learn early that feeding and sleeping times are pleasant but serious occasions, not meant for play.

The older baby should learn to play for half an hour to an hour by himself. He should be left alone in his pen or crib with one or two toys that are tied to the crib by short tapes. As he grows older this becomes more and more important. It is not good for a baby to be entertained or waited on all the time. He should

learn to do things for himself. His mother may watch him from an adjoining room without letting him know that he is being watched.

Play pen.—By the time a baby is 9 or 10 months old it is very desirable to have a play pen, either bought ready-made or built at home, so that he may learn to creep and stand and pull himself up while his feet are on a firm surface. Such a pen gives the baby room for exercise and keeps him from creeping into dangerous places, such as near a heater or the kitchen stove. The pen consists of a fence made in four sections, each 18 to 24 inches high and 4 feet long, hinged at three corners and latched at the fourth corner or hinged at all four corners and latched at the center of one side, surrounding a wooden floor raised about 2 inches from the room floor. Ready-made pens have spindles, so that the baby may have something to take hold of when he tries to climb to his feet. These pens fold together, and then can be moved about readily. The pen floor should have a cover of washable goods, such as denim or ticking, tied to the corners by strong tapes.

A combination play pen and bed may be used for a baby to play in until he is about 6 or 7 months old, when he begins to try to pull himself up (see p. 19). At this age he needs a firm floor to stand on.

If a pen cannot be bought nor built at home, a smooth board 6 or 8 feet long and 1 foot wide may be used to fence off a corner of the baby's room as a pen.

Learning to walk.—A baby should not be taught to walk until he shows that he is ready for it. Too early walking may keep the natural bowing of a little baby's legs from straightening or may even increase it. (At birth the normal baby's legs are somewhat bowed. As he grows older they straighten unless he has rickets.)

No "baby walker" should be used, nor any other device that forces the baby to walk with the legs spread apart. A baby walker may overtire a child, because it holds him too long in a confined space and in a more or less rigid position.

Toys.—As a baby wants to suck and bite everything, all his toys must be of the kind that can safely be put into his mouth. They should be washable and have no sharp points or corners. They should not be small enough to be swallowed nor have parts, such as bells or the whistles in rubber toys, that may be swallowed. They should be washed often. Rubber or bone toys are excellent. Painted articles (if the baby bites them) are unsafe unless paint containing no lead is used.

A baby should not have more than one or two kinds of toys at a time, and they should be simple. Clothespins or spools on a string or a rubber doll will probably please him more than an expensive toy. Give him time to explore one toy thoroughly before giving him another. Floating celluloid toys for the bath are of great interest, but the older baby will bite them unless he is watched.

The older baby needs toys with which he can learn to do things, such as blocks, a cup and spoon, a pie pan, a box with a cover which he can take off and put on easily, a large ball, a small horse and wagon, a string of large wooden beads, a cloth book with large colored pictures of animals or familiar objects.

Tie toys to the crib or pen with short tapes and let the baby find out for himself how to get them back when he has dropped them. Do not pick up toys, or he will throw them down to see you pick them up. It is a good plan to have a box or a basket for empty spools and other household objects that will interest the baby.

Habits, Training, and Discipline

HABITS are the result of repeated actions. A baby, like a grown person, has a tendency to do again something that he has done before if he has found satisfaction in doing it the first time. The health, happiness, and efficiency of the older child and of the adult depend largely on the habits formed in early childhood. The habits of the little child are begun in the first year of life, some of them directly after birth. The parents cannot postpone planning the child's training until he is "old enough to understand." If the child is to have desirable habits of health and of behavior and grow into a healthy, happy, useful adult, training must begin immediately after birth and be regular throughout infancy so that certain attitudes and acts may become habitual.

Though some habits seem to relate more closely to health and others to behavior, the principles that underlie them are the same. Desirable habits must be established consciously by the efforts of the parents and the formation of undesirable habits prevented. The problems of discipline in infancy are part of the general program of habit formation. The important habits that may be established in the first year have to do with eating, sleeping, and elimination. Good habits in all these aspects of the baby's life may be built up if regularity is observed in the performance of each act, if the parents are consistent and logical in their demands and absolutely honest with the baby, and if he can find satisfaction in the act.

BEGINNING TRAINING AT BIRTH

The first 3 months of life are perhaps the most important of all. The habit of regularity in feeding and sleeping can be begun almost immediately and, once established, it should not be interrupted or broken for any reason except a real emergency such as illness. If the baby wakes between feedings and begins to cry but has no signs of illness, turn him over, change his diaper, give him water to drink, and put him back into bed. Do not hold him nor rock him to stop his crying, and do not nurse him until the hour for the feeding comes. It will not hurt the well baby to cry. Crying is the younger baby's one means of expressing his needs and his dislikes.

Every now and then when the baby is lying quietly in his crib, awake, the mother or the father should pick him up and play with him. The baby will learn before long that he is likely to be picked up when he is not crying and ignored when he is crying.

If a baby is picked up every time he cries he will soon develop the habit of crying each time he wakes until his mother does pick him up and fondle him or rock him. This is not a good habit either for the baby or for the mother. It interferes with the baby's sleep and with the mother's work or rest. It teaches the baby that crying will give him control over his parents.

Sometimes crying because of colic will start the habit of crying to be picked up. As one of the methods of treating colic is to pick the baby up and raise him over the shoulder so that swallowed air may escape and as it is difficult for the mother to tell whether the baby is crying with pain or not, it is only too easy for him to form the habit of crying to be picked up. If she is doubtful whether he is in pain, she should try to make him comfortable and then put him back in his bed. Nothing is gained by walking the floor with him.

When a baby cries very hard he sometimes holds his breath so long that he gets blue and stiffens out. This breath-holding spell is one form of tantrum. It is terrifying to parents and usually makes them give in to the baby at once. The baby who has such spells is usually old enough to get satisfaction from the anxiety and excitement that he has caused. If he has gained his own way by having this form of tantrum, he will repeat it whenever his wants are not immediately supplied. To handle such a spell, be as calm as possible, put the baby in his bed, leave him alone, but watch him quietly from a little distance. He will soon relax and breathe normally. See to it that the spell does not gain for the baby the thing that he wants.

If the little baby learns that crying does not get him what he wants he will not use it to control his parents later. He will learn in the same way that temper tantrums will not get him what he wants.

THE FORMATION OF HABITS

When a desirable habit is to be formed the act must be done in the best way possible the first time and repeated consistently until it becomes "second nature." If the baby gets satisfaction from the act, such as having his hunger satisfied or his desire for pleasure and attention gratified by a pat or a smile or a word of approval, the habit will be established more readily. For example, if the baby is fed and put to bed at the same time every day he will learn to expect these things regularly and will form his first important health habits—regularity in eating and sleeping. If, on the other hand, a baby is usually put to bed right after his 6 o'clock feeding but is sometimes kept up to be shown off to friends or is taken to the movies with his parents, the routine is broken, the baby begins to stay awake in the evening, and then he objects to being put to bed early. As he grows older and wiser his objections to going to bed become more insistent, and soon his mother will say, "The baby just won't go to bed at 6," or "The baby won't go to bed until I do."

As babies get older they get more and more satisfaction from their parents' words and smiles of approval and from any kind of attention. The mother should give the baby attention and approval when he is doing what she wants him to do. This will have a more beneficial effect on his training than scolding him and making a scene over him when he does what she does not want him to do.

If an undesirable habit has been formed the way to get rid of it is to substitute a desirable habit for it. The parents should see that the baby gets no satis-

faction from doing the undesirable thing, even from the attention he gets while being scolded, and that he does get satisfaction through approval for doing the desirable thing.

Desirable behavior should be rewarded by words and acts of approval. The baby will quickly learn the difference between right (acceptable) behavior and wrong (unacceptable) behavior and will be willing to do the right thing for the sake of praise and approval.

Punishment has little place in the first year of life, but whatever punishment is given must be given consistently. If parents demand one form of behavior today and another tomorrow, laugh at the baby today for doing a "cute trick" and tomorrow punish him for the same thing, the baby will be completely confused as to what he should and should not do. The problem of discipline is part of the problem of regular habit formation. Slapping or other corporal punishment should never be resorted to with babies.

FEEDING HABITS

Good eating habits should be established from the start. Feeding from the second or third day of life should be given regularly. If this is done the tiny baby will wake at feeding time and sleep between times. A definite schedule of feedings should be followed. (See Baby's daily schedule, p. 6.) The baby's diet should be carefully planned. He should have foods other than milk as soon as he is able to eat them. (See p. 57.) Semisolid or solid foods, when given, should be offered with the breast milk or cow's milk and not between feedings. At first they will be new and strange to the baby. He must learn how to manage solid foods and to eat many kinds.

Mealtime should always be a happy time, but not a playtime. The business of a baby's eating is an important one. A baby should be fed alone, without distractions from visitors or from other members of the family.

A mother's desire to have her baby gain weight and grow may make her over-anxious if he does not eat everything she offers him. The baby may learn early that he can create excitement and get attention from his parents and power over them by refusing to eat some particular food. Do not coax the baby to eat, for he is likely to enjoy the coaxing and to refuse food as long as he can command this pleasant form of attention. Show no anxiety nor excitement if he refuses food, but quietly take the food away after he has had ample opportunity to eat it.

If, however, the baby persistently refuses a food which he should be eating, more definite steps may need to be taken to teach him to eat it. At the beginning of the meal offer a small amount of the kind of food that he refused before. Show him without excitement that he can have the rest of his meal after he eats the special food, but unless he eats it he cannot have anything else, not even his milk. This can be done even if he is only 7 or 8 months old. If he refuses give him nothing but water. At the next meal offer him again a small amount of the same kind of food. If he again refuses it give him nothing but water. It is safe to allow a well baby to go 24 hours without food if he has water to drink. (No milk or other foods should be given between feedings.) The baby will finally eat

the food. When he does eat it, show your approval and give him the rest of his meal. Show no anxiety nor excitement throughout. If no fuss is made over him, he will get no satisfaction out of refusing and his appetite will soon make him give in.

SLEEPING HABITS

As with feeding, regularity is of first importance in teaching a baby good sleeping habits. Every night at the same time, immediately after the feeding, the baby should be put to bed while still awake. The mother should see that he is comfortable, warm enough in cold weather and as cool as possible in hot weather, and that his room is well aired. Then she should turn the lights out and leave him alone. If this routine is followed without interruption from birth, the baby will go to bed without complaint and will not cry to be picked up. Good sleeping habits formed in infancy will usually continue through childhood.

If the baby is allowed to go to sleep in his mother's arms or if he is rocked to sleep before being put into his bed, he does not associate going to bed with going to sleep. He must therefore be awake when put in his bed and must go to sleep there. If he is kept up late frequently to see visitors or to go out with his parents, or is taken up after he has been put to bed he soon learns to enjoy the evening excitement and does not want to go to bed as usual.

Parents must not start the habit of coaxing a baby to sleep by rocking him, walking with him, holding him, lying down with him, or holding his hand after he is put into bed. He should not be put to sleep with his bottle. He should never be given a nipple to suck nor anything else to put into his mouth. If any of these habits is started, it will be hard to break and may interfere with the child's sleep.

If a baby becomes ill, irregular sleeping habits may result. As soon as possible the regular routine should be started again and held to all the more strictly because of the interruption of it by illness.

The daytime naps should be just as regular as the night sleep.

TOILET HABITS

Training for control of the bowels.

Training the baby so that the diapers will not be soiled may be begun as early as the sixth month or even earlier. The first essential in training is regularity. The training requires patience, but the result is well worth the effort. The training is usually completed by the time the baby is a year old.

To begin the training the mother should notice at what time the baby usually soils his diaper. She may even observe signs that he is about to have a bowel movement, such as grunting and getting a little red in the face. At that time she should hold him over the chamber for a few minutes. The mother holds the chamber in her lap and places the baby over it with his back against her chest. This makes it possible for the mother to support the young baby before he is able to sit alone. The baby should be held over the chamber in this way each day for a short period until he establishes the habit of a regular bowel movement.

As soon as a baby is able to sit alone (at the age of 6 to 8 months) he should be taught to use the nursery chair.

Such bowel training, together with a proper diet, usually will prevent constipation. Constipation, which may occur in both breast-fed and bottle-fed babies, means failure to empty the bowels regularly, or the passing of hard material from the bowels, or the passing of a very small amount of material.

Most babies will have at least one bowel movement every day, but for some babies it is normal to have a movement only every second day. Often increasing the water the baby takes will relieve constipation.

The doctor should be consulted when constipation is persistent, so that he may advise about regulating the diet. The juice of cooked prunes (1 to 6 teaspoonfuls), or for older infants, prune pulp, is a good laxative food.

Until diet and habit formation correct constipation, it may be necessary to resort to temporary measures. Mineral oil does not act as a drug but merely softens the stool. One or two teaspoonfuls may be given every day for a few days; as the stool becomes softer the amount should be decreased and the dose finally omitted. For immediate relief a soap stick or an enema may be used occasionally. Castor oil or other cathartics should *not* be given except on the order of the doctor.

Training for control of the bladder.

When the baby is 10 months old begin training him to control his bladder. It takes longer to teach him control of the bladder than of the bowels, but the method is the same. The baby should be given the chamber regularly, at first once an hour while awake and gradually at longer intervals. Some simple word should be used each time so that he may associate the word with the act and learn to use this word himself a little later.

Most children should have daytime control of the bladder by the time they are 2 years of age. By this time also the child may have learned to indicate his need. As soon as he can stand he should wear drawers instead of diapers. This will help in his training. Many children continue to wet their clothes only as long as they wear diapers.

As a rule a child will not learn to control his bladder at night until between the second and third birthdays, after control during the day is well established. (See Children's Bureau bulletin, *The Child From One to Six*, p. 35, for control of the bladder in the older child, and *Child Management*, p. 51, for treatment of bed wetting.) The mother should remember that as she is trying to establish a "dry" habit it will not help to leave the wet clothing on. If the child wets himself by accident the drawers or diaper should be changed at once. He should be praised when he keeps dry but not scolded when he has an accident.

UNDESIRABLE HABITS

Sucking on "pacifiers."

The habit of sucking on a rubber nipple, a "pacifier," or any other article of this kind is extremely bad for the baby, and this kind of thing should not be given to him. Some of the evil effects of this habit are that it spoils the natural arch of the mouth by causing protrusion of the upper jaw; it causes constant flow of saliva and keeps the baby drooling; it may readily carry the germs of disease into

the baby's mouth; and it is a habit which is particularly disfiguring to the baby's appearance. If he has formed the habit it must be broken at once by taking away the pacifier and never letting him see it again. He will cry for it at first but will forget it eventually.

Thumb sucking.

Thumb sucking or finger sucking may begin soon after birth, and if it is not stopped early it may persist for months or years. It is a natural habit for the baby to acquire, but may become a very bad habit if carried over into childhood. It is more easily prevented than cured. Though it is important to prevent it, or to overcome it if it does start, it should not excite parents unduly. When a baby first discovers his thumb or finger he naturally starts sucking it. Whenever he does this, the mother should put a toy in his hand to divert him. As the baby gets older it sometimes happens that thumb sucking continues merely because the habit is firmly fixed. It is not desirable to punish the baby, nor to use anything that hampers the free movement of his hands and arms. Giving the baby a toy to keep his hands occupied is one of the best ways to break the habit. Usually when the child no longer has the baby need for sucking he will outgrow the habit if not too much fuss is made over it.

Masturbation.

Frequently at an early age—sometimes as early as 6 months—children discover accidentally that pleasurable sensations can be aroused by handling or rubbing the genitals, squeezing the thighs together tightly, riding on some one's foot, or in other ways. This handling or rubbing of the genitals is called masturbation. This early habit will not persist unless it is unwisely treated by adults. It should play no more important part in the life of the child than does the early habit of bed wetting.

A child who has this habit should be carefully examined by a doctor to determine whether there is any physical cause, such as irritation, constipation, or intestinal worms. The urine should be tested. The genitals should be kept clean. (See p. 29.)

Punishment and physical restraint are of little value in dealing with this habit, as they tend to fix the baby's attention on what he is doing and may strengthen the habit rather than stop it. Masturbation in infancy may be prevented if the mother is watchful and keeps the baby's attention focused on other things. The best method of treatment is occupation and diversion. The baby's attention should be turned to some other activity. When he is put to bed his hands should be kept outside the covers. (If it is cold, he should wear mittens or a jacket with sleeves that cover the hands.) He may be given a toy to hold until he goes to sleep and when he wakes in the morning. Different toys should be given, so that he may not become so fond of one that he will not go to sleep without it. When he is having his bath floating toys will distract his attention from his genitals.

Feeding

THE health and development of the baby are closely related to the way he is fed during his first year. For this reason a physician experienced in the care and feeding of infants should be consulted as soon as the baby is born and at regular intervals thereafter—at least once a month. He will advise the mother with regard to all the details of feeding, and she should follow his advice with the greatest care.

To help the baby's body develop properly, with well-formed bones, good teeth, strong muscles, and good color, to rebuild worn-out tissues, to warm him and provide him with energy, to prevent deficiency diseases (see p. 11), and to regulate the discharges of waste from the body a number of food factors are needed. The factors that the baby's diet should contain are:

Proteins, which repair worn-out tissue and build new tissue (proteins also supply energy and warm the body).

Fats, which supply energy, warm the body, and build body fat.

Starches and sugars, which supply energy for muscular activities, warm the body, and build body fat.

Minerals, such as iron (which helps to build red blood cells), calcium and phosphorus (which help to build bones and teeth), and many other minerals. The body needs minerals for many purposes.

Vitamins, which control growth and health. Certain vitamins are called by the letters A, B, C, D, and so forth. All these vitamins, and possibly others not yet well known, are necessary for the growth and health of babies. The vitamins prevent and cure certain diseases. For example, vitamin C prevents and cures scurvy, and vitamin D prevents and cures rickets.

Water, which is necessary for good health in babies. Some babies get enough water in the breast milk and additional foods, but water should be offered regularly to every baby, whether he takes it or not.

Breast milk, if the baby gets enough and if the mother's hygiene and diet are good, or a proper cow's milk mixture supplies enough protein, fat, and sugar and some of the other food elements needed for health and growth in the first months of life. But some elements are likely to be scarce or lacking in milk, and therefore at the proper ages the baby should be given additional foods (see p. 57).

The baby should learn soon after birth to take food at regular hours. If the mother gives the baby his feeding at the times decided on, the average baby will learn very early in life to wake regularly for food and to sleep most of the time between feedings.

BREAST FEEDING

IMPORTANCE OF BREAST FEEDING

The food best suited to the normal development of the young of every mammal, including man, is secreted for it by its mother. The milk of each animal is different from that of every other, and each is especially adapted to the needs of its own young. Cow's milk is suited to the needs of newborn calves; human milk, for newborn babies. The best method of feeding a baby for his first 7 or 8 months is at his mother's breast.

Breast milk is easily assimilated and clean, and breast feeding is convenient for the mother. Breast feeding gives a baby a better chance for life and for steady and normal growth.

In order to be able to nurse her baby a mother should try to get enough rest, to eat the proper food, and to follow the doctor's directions in taking care of her breasts.

PRODUCTION OF BREAST MILK

The baby is not placed at the mother's breast until both he and the mother have had a number of hours' rest after his birth—6 to 12 at least, depending on the doctor's orders. For the first few days the mother's breasts secrete a thick, yellowish fluid called colostrum. When the baby is first put to the breast he draws the colostrum. After the first nursing he should be put to the breast regularly every 4 hours, unless the physician advises that he be fed more frequently. The regular sucking stimulates the mother's breasts, and gradually the true milk, which is thin and bluish, comes into the breasts, taking the place of the colostrum. By the third or fourth day there is usually enough milk for the baby. During these first few days before the mother's milk comes, the baby should be given tepid boiled water, as much as he will take in 5 minutes, at regular intervals of 3 to 4 hours. Some doctors advise sweetening the water.

As the baby grows the amount of milk in the mother's breasts gradually increases. Some milk is in the breast at the beginning of a nursing, but most of it is actually formed during the nursing. The quantity that the baby gets at a feeding depends largely on the energy, strength, and persistence with which he sucks. Emptying the breast completely helps more than anything else to produce milk. (For feeding hours see p. 51.)

The amount of milk produced and its quality depend not only upon the demands of the baby but also on the diet and hygiene of the mother and on her determination to nurse her baby.

HYGIENE OF THE NURSING MOTHER

Diet.

A nursing mother needs an abundance of food that is nutritious and appetizing. She should eat three regular meals in 24 hours, and a midmorning or midafternoon lunch.

Unless the doctor orders a special diet, each day's food should include—

A quart of milk, which may be used in cooking foods as well as for drinking.

Fresh milk should be pasteurized or boiled. Canned milk—evaporated or dried—may be used.

A serving of meat or fish.

A raw vegetable or a green salad.

A cooked vegetable, green leafy or yellow.

An egg.

An orange or half a grapefruit, or a tomato. (Tomatoes may be fresh or canned.)

A serving of whole-grain cereal or bread.

Other foods, such as potatoes, bread and butter, and dried or fresh fruits.

The doctor will decide how much of these foods should be eaten daily.

The following is a sample day's food plan for a nursing mother:

BREAKFAST

Oatmeal with whole milk.	Orange.	Toast and butter.
One cup of coffee or tea, or a glass of whole milk.		

DINNER

Pot roast of beef, or other lean meat.		
Baked potato.		String beans or carrots or both.
Bread and butter.		Glass of whole milk.
Baked custard.		

SUPPER OR LUNCHEON

Baked rice and cheese.		Apple and celery salad.
Whole-wheat muffins and butter.		
Stewed apricots.		
One cup of cocoa made with whole milk, or a glass of whole milk.		
A glass of whole milk may be taken before bedtime.		

The above is only a sample. Try to vary your meals from day to day.

Every effort should be made to get liberal amounts of vegetables, as no other food can adequately replace them in the diet of the nursing mother. Turnips, carrots, parsnips, cabbage, cauliflower, beets, eggplant, celery, and squash can usually be bought all winter. Canned tomatoes also, and other canned vegetables may be used.

When fresh fruit is too expensive or out of season, dried or canned fruit, or canned fruit juice, may be used, but small oranges for squeezing can usually be obtained at relatively low cost all the year round.

Evaporated or dried milk may be used if safe fresh milk is not available at moderate cost. If a full quart of milk has not been consumed with the three meals, either plain or in cooking, another glass should be taken in the midmorning, in the midafternoon, or before going to bed.

At least one quart of fluid in addition to milk should be taken daily. Water and fruit juices should be taken, and coffee or tea (one or two cups a day) is allowable.

Cod-liver oil, or some other form of vitamin D, is often needed. It should be taken under a doctor's direction.

The mother may eat anything that does not upset her or the baby. The old-fashioned belief that a nursing mother cannot take certain classes of food, such as acid fruits or vegetables, for fear of upsetting the baby is now known to be erroneous. Occasionally a certain food in the mother's diet may cause distress to a particular baby, and if the mother is sure of this, the food should be cut out of her diet. Sometimes food gives the mother indigestion because it has not been cooked properly or because too large amounts of it have been eaten.

Bowels.

Constipation in the nursing mother is very common and must be guarded against. Every effort should be made to regulate the bowels through food and exercise. Bulky vegetables are helpful, and also fruits, particularly figs and prunes. Eating whole-grain bread and cereals will usually correct constipation. Some people find bran effective. A glass of water taken regularly the first thing in the morning may help. Regularity of habits is important, and a daily hour for the stool should be established. Daily walks or setting-up exercises are helpful.

Baths.

Baths should be taken often by the nursing mother. She may find that she perspires very freely, and she should make special effort to keep herself free from odors of perspiration and stale milk. Frequent changes of underclothing are desirable.

Sleep and rest.

Sufficient sleep is most necessary for the nursing mother. The 2 a. m. nursing should be given up as soon as possible. There will then be only one nursing between 6 p. m. and 6 a. m., so that the mother may have a long, unbroken sleep after the night feeding. At least 8 hours' sleep at night and 1 hour's rest during the day are desirable for every nursing mother. A tired mother cannot produce the proper food for her baby.

If the baby has not been trained to sleep all night or if he is fretful, it may be best for some one other than the mother to get up with him at night. Even when the mother must take care of him at night he should sleep in a bed by himself, preferably in the next room.

Work.

The mother should not overwork during the nursing period. Often mothers who have plenty of milk for their babies at first find that the amount is greatly reduced when they go back to household duties. Many mothers are not strong enough to undertake their regular duties until at least 6 weeks after childbirth. By this time the milk flow has been well established. Many mothers have to work hard during the nursing period, but they should resume their duties gradually.

Fatigue should be avoided by taking short rests between tasks. Lying down for 5 minutes several times a day may enable the mother to do more than she would otherwise be able to do safely. To get more rest it is well for her to nurse her baby in a half-reclining or other comfortable position. This will give her 15 or 20 minutes' relaxation every few hours.

Fresh air and exercise.

Moderate exercise in the open air and sunshine, especially walking, is desirable for the sake of good health. If a mother has much work to do inside the house she will not have strength for much walking or other exercise outdoors. She should try, however, to spend some time each day in the open air and sunshine.

Fresh air indoors is needed for health, and sleeping and living rooms should be kept well ventilated.

Recreation.

Some form of recreation is good for everyone. Outdoor life and recreation help to keep the mother happy and contented. A moderate amount of diversion favors contentment of spirit, which is one of the essentials in maintaining the supply of breast milk. The mother who can lead an even, regular life without emotional upsets will probably nurse her baby the more successfully on that account.

The care of the mother's breasts.

Upon the care given the breasts, in many cases, depends the success of breast feeding.

Before the baby is born.—The mother can prepare to nurse the baby by seeing to it that the breasts themselves are in the best possible condition. By wearing loose clothing she can allow them plenty of room to develop; a tight, flattening brassiere may prevent free circulation. The doctor will examine breasts and nipples to see whether special treatment is necessary, and the mother will notice if anything seems wrong with her breasts and should report it to the doctor at once.

After the baby is born.—The nipples should be washed with boiled water before and after each nursing. Between nursings they should be covered with clean linen. The care of the nipples should be given only with very clean hands.

In some cases, when the milk first comes in, the breasts may become painful. Usually this condition rights itself without difficulty as soon as the regular emptying of the breasts is established. During this period of adjustment the mother can help to relieve the pain by wearing a brassiere that lifts and supports the breasts and by drinking less water and other fluids than usual. Regularity in nursing the baby helps to prevent pain in the breasts.

If a supporting brassiere is used in time and the mother takes little fluid in her diet for a few days it is rarely necessary to empty the breasts by hand in order to relieve pain. Emptying the breasts by hand tends to increase the production of milk, which is just what is not desired when the breasts are painful. Unnecessary handling of the breasts should be avoided. If the trouble does not disappear and the breasts become more painful and tense ("caked"), a doctor should be

consulted. With proper care caked breasts will soon get well. A baby should never be weaned because of caked breasts, as it is only a temporary condition.

The baby's first efforts to nurse often make the nipples sore. Great care must be taken to keep the nipples free from infection, or the tiny cracks of a sore nipple may develop into a fissure, resulting sometimes in a breast abscess. A doctor should be consulted if the nipples are sore or cracked or the breasts are abscessed or if anything else interferes with satisfactory nursing. Never allow the baby's mouth to come in direct contact with a sore nipple. Let him draw the milk from the breast through a shield. The nipple shield should be cleaned thoroughly after nursing and boiled before being used again. If the baby cannot obtain milk when the shield is used the mother should express the milk from her breast by hand or with some type of breast pump and feed it to the child from a nursing bottle.

Before expressing the milk by hand scrub the hands and nails with soap and warm water for 1 full minute, using a brush. Wash the nipple with fresh cotton and boiled water. Dry the hands on a clean towel. Have a sterilized glass and bottle ready to receive the milk. If the glass you are using has no lip, you should have ready a sterilized funnel also.

Place the balls of the thumb and forefinger on opposite sides of the breast $1\frac{1}{2}$ inches from the nipple. This is usually at the edge of the pigmented area. Press deeply and firmly into the breast until the resistance of the ribs is felt. Then bring the thumb and fingers tightly together well behind the base of the nipple. When the fingers and thumb are pressed deeply into the breast keep them there and repeat the "together" motion 60 to 100 times per minute. Speed is important and is attained after some practice. The fingers should not slip forward on the breast lest the skin be irritated. It is not necessary to touch the nipple. If the stripping of the breasts is done in this way it will cause no discomfort. If the milk expressed is not to be used at once it should be kept on ice in a stoppered sterilized bottle.

WET NURSES AND BREAST-MILK AGENCIES

Some newborn babies, especially those prematurely born, and some babies who are very delicate or who suffer from chronic digestive disturbances cannot be made to thrive on artificial food. If such babies cannot be nursed by their mothers it is wise to provide breast milk, either by engaging a wet nurse or by buying breast milk from a hospital or a breast-milk agency. In some large cities there are agencies where breast milk can be bought or wet nurses engaged. In small towns or in the country wet nurses or breast milk can be had by advertising or by inquiring at a maternity hospital in some nearby city. Sometimes breast milk may be obtained from a friend or a relative. It is often more satisfactory to buy breast milk than to employ a wet nurse in the home. If it is bought from an individual, it is desirable that the woman should come to the baby's home, so that there may be supervision of the expression of the milk. All breast milk obtained from a wet nurse or other individual should be boiled and kept on ice in sterile bottles. If it is bought from a hospital or other agency where the milk is boiled

or pasteurized and delivered in sterile bottles, the bottles should be kept on ice without being opened until used.

When a wet nurse is employed it is not necessary that her own baby should be of the same age as the baby to be nursed. It is best to engage a nurse whose baby is at least 6 weeks old and not more than 9 months old. The condition of the nurse's own baby should be such as to indicate that his mother can produce an abundant milk supply.

The general health of the wet nurse and of her baby should be considered before she is engaged. Good health in her baby usually indicates that she has an adequate supply of breast milk. The wet nurse must not have any disease that she could transmit to the nursling. Both the wet nurse and her baby should be given a complete examination by a doctor, including examination of the lungs, a blood test for syphilis, and examination for gonorrhoea and tuberculosis. No nurse should be employed who has a cough or a cold or who has had tuberculosis. The wet nurse should follow the rules of hygiene (including diet) for a nursing mother that are given on pages 45-49.



Every wet nurse should nurse her own baby as well as the baby she is engaged to nurse. Her peace of mind will insure a better supply of breast milk. Also, if the baby to be wet-nursed is small and weak, it may help to increase the milk supply to have the wet nurse's breasts emptied afterward by a more vigorous baby. Professional wet nurses in hospitals often furnish enough milk for several babies at a time; there need be no fear that a wet nurse cannot supply milk for two if she has good breasts and follows the rules of hygiene.

HOW TO NURSE THE BABY

During the first 2 weeks after the baby's birth the mother necessarily nurses him while lying down and she should place him on the bed at her side. He must always be able to breathe freely, and therefore the mother should keep the breast from covering his nostrils.

After the mother is up, the position for nursing should be as comfortable as possible, so that she may relax during the nursing period. It is best that she sit in a comfortable chair with her feet on a low stool, and hold the baby on her lap in a reclining position so that his head rests against her arm. Holding the baby up over her shoulder both before and after nursing and patting him on the back for a minute or two will help him to expel any air that is in his stomach. This will help to prevent "spitting up."

Neither the mother nor the baby should be disturbed while nursing, and the baby should not be encouraged to play nor be allowed to sleep while at the breast.

The usual time of nursing should be between 10 and 20 minutes. Occasionally a vigorous child may take enough milk in 5 minutes, and a feeble baby may nurse so slowly that it will take him the full 20 minutes to obtain a meal. It is usually not wise to allow a baby to nurse more than 20 minutes. It is important that each breast be emptied completely at least twice every 24 hours in order to keep up the supply of milk. If the milk is plentiful, only one breast should be given at a feeding, the other being given at the next feeding. If the baby is not strong enough to empty the breast completely, it should be emptied completely by hand. As the time for weaning approaches, or if the milk supply is scanty, it is often necessary to give both breasts at each feeding in order to satisfy the baby, but the breast given first should be alternated so that one at least is emptied completely at each nursing. Give either the first breast for 15 minutes and the second for 5, or each for 10 minutes.

AMOUNT OF FOOD

The amount of food a normal breast-fed baby takes in the 24 hours varies with the age and size of the baby and also varies with the individual baby. To find out how much milk a breast-fed baby gets at a feeding, weigh him just before and just after each feeding; his increase in weight in ounces gives the number of ounces of food taken. No change should be made in clothes between these weighings; the diaper should not be changed. The amounts taken at different feedings vary. Conclusions must not be drawn from weighing the baby before and after a single nursing; he should be weighed before and after each feeding for 1 or 2 full days until it can be settled how much he receives in 24 hours. To find out how much milk he is getting in 24 hours add together the amounts taken at each feeding in the 24-hour period.

Regular gain in weight is the most satisfactory indication that the baby is getting enough food. If his gain is not satisfactory (see p. 52) it may be necessary to find out in this way how much milk he is getting. After the first week he should have from 2 to 3 ounces of breast milk a day for every pound of weight.

FEEDING INTERVALS

The baby should be put to the breast about 6 to 12 hours after birth (see p. 45). After this first nursing he should be fed every 4 hours, unless the physician advises shorter intervals, such as every 3 hours. Hours for feeding commonly used are 6 a. m., 10 a. m., 2 p. m., 6 p. m., 10 p. m., and 2 a. m. The baby should be wakened for each feeding except the one at 2 a. m. The 2 a. m. feeding may usually be dropped by the time the baby is 2 months old, or sooner if he is gaining well. He may cry the first night or two, but after that he will learn to sleep through the night. The 4-hour schedule should be continued throughout the first year. The 10 p. m. feeding should be dropped when the baby is 9 months old and may be omitted much earlier.

DRINKING WATER

A breast-fed baby should be offered boiled water (unsweetened) regularly between feedings—in winter two or three times a day, in hot weather four or

five times, since he perspires freely then and needs more. Some breast-fed babies get enough water from the milk and will refuse water from a bottle. Even if water is refused it should be offered regularly.

STOOLS

The newborn baby's first stools are known as meconium. They are very dark green, thick, and sticky, with little or no odor. They soon change to the normal yellow stool of the healthy baby as he begins to feed at his mother's breast. If any blood is seen in the stool of a newborn baby the fact should be reported to the doctor immediately.

A well, breast-fed baby ordinarily has one to three stools a day; he may even have four. Some well babies have infrequent stools; they may have one only every other day. Such a baby is not to be considered constipated, if his stools are soft and pasty. If they are hard and dry and the baby passes them with difficulty he is constipated and the doctor should be told. Do not give any drugs except on the advice of a doctor.

The normal stools of a breast-fed baby are bright orange-yellow, though occasionally they may be tinged with green. They are soft and pasty and may contain very small, soft curds.

WEIGHT

The weight of a baby at birth averages about 7 pounds. For the first few days the mother's milk is not sufficient to allow him to gain or even to maintain his weight. Therefore most babies lose about one-tenth of the birth weight during the first days of life. It is usually regained by the end of the second week.

Gain in weight is the only reliable indication that a baby has sufficient food. Weighing him once a week will settle this question. A normal breast-fed baby gains 4 to 8 ounces a week during the first year. During the earlier months his gain is more rapid than during the latter half of the year. A simple rule is that a baby doubles his birth weight by the end of the fifth or sixth month and trebles it by the end of the first year. It is best to weigh the baby once a week for the first 6 months of life and every 2 weeks for the second 6 months.

No two infants are exactly alike in development or in power to make use of food, and the same baby will not always gain an equal amount every week. It is a fairly good indication that a baby is not having the proper kind or amount of food or has some other condition requiring attention, if he fails to gain for 2 successive weeks or if his gain is unsatisfactory for more than 2 weeks.

UNDERFEEDING

A baby who shows no gain or a loss in weight may be underfed. He either nurses for a short time and then gives up and falls asleep, or he cries after an exhausting attempt to obtain food. The stools are scanty, often only brown stains. The baby seems weak, his body may feel flabby, and his skin may look pale. He may cry a great deal or very little or he may sleep a great deal.

To find out whether he is getting enough food weigh him before and after feeding during a period of 24 to 48 hours. (See p. 51.) It may be that the mother has not enough milk, or it may be that he is not able to nurse properly, because

he is not vigorous enough, because he has a deformed mouth, or because his nose is stopped up. If the supply of breast milk is scanty, steps should be taken to increase the supply, and until this is brought about additional food should be given to the baby. (See Mixed feeding, p. 54.) If the baby is not able to suck properly, the mother's milk should be expressed by hand regularly, and a medicine dropper used to feed this milk to the baby. The baby's nose and mouth should be examined by a doctor.

To increase the milk supply attention should be paid to the diet and hygiene of the mother. She should have plenty of rest and sleep and take the proper amounts of food and liquids. (See p. 45.) The breasts should be emptied thoroughly at regular intervals. If the baby does not empty the breast this should be done by hand. (See p. 49.) If the supply of milk from one breast is inadequate both breasts should be used at each feeding. Persistent efforts to increase the amount of milk will usually be successful.

It is frequently possible to bring back the flow of breast milk even when it seems to have ceased. This is done by putting the baby to both breasts, for 7 to 10 minutes each, every 4 hours and by following each nursing with expression of milk to insure complete emptying and adequate stimulation of the breasts. The daily routine and hygiene of the mother should be regulated to insure sufficient rest, proper diet, and a quiet normal life.

OVERFEEDING

Overfeeding is comparatively rare in the breast-fed baby. When it occurs it usually means that the nursing periods are too frequent or that the quantity taken at one time is too large. To remedy it, the time at the breast should be decreased and the interval between feedings increased if it is less than 4 hours. (Less frequent feedings will help to regulate the overabundant supply of milk.)

SPITTING UP

Spitting up or spilling over (not the same as vomiting) is usually caused by pressure of air in the stomach. It may be due to feeding too much or too often. Spitting up is very common in breast-fed babies. It can nearly always be prevented by holding the baby in an upright position over the mother's shoulder before and after feeding, and patting him on the back until the air swallowed is expelled. If it is due to overfeeding, lengthening the interval between feedings or shortening the period at the breast may be all that is necessary.

HICCOUGHS

Hiccoughs occur in many babies and should not cause anxiety. Give the baby a few spoonfuls of warm water or turn him over and pat him on the back. It may be necessary to lengthen the interval between feedings if it is less than 4 hours.

COLIC

Colic is the term used by many people who care for babies to signify that the baby appears to be in pain. The legs may be drawn up and air may be passed by mouth or gas by rectum. No doubt babies sometimes have pain from "gas"

in the stomach or intestines just as older children do. It is usually not serious; but if it is persistent, the advice of a doctor should be sought. Colic usually disappears as the baby grows older. Treatment of the immediate symptoms consists in getting rid of the air or gas. The baby may be held up over the shoulder to aid in expelling the gas from the stomach. The pains are frequently relieved when the baby passes gas by rectum or has a stool. Sometimes it is necessary to give a soap stick or a small enema (see p. 93) to relieve colic. An enema is much more effective than medicine. Medicine for colic should never be given except on the advice of a doctor.

MIXED FEEDING

Before mixed feeding (part breast feeding and part artificial) is begun every effort should have been made to keep up the supply of breast milk. If the baby is not getting enough breast milk, however, the doctor should be consulted and may advise mixed feeding.

The method that is usually most satisfactory is to give a small bottle feeding—1 to 3 ounces of cow's milk mixture—immediately after the breast feeding. This may be done at as many feedings a day as the doctor recommends. The amount and strength of milk mixture to be given at each feeding will depend on the age and weight of the baby and the amount of breast milk that he is getting. To help the doctor calculate how much additional food must be given, weigh the baby before and after each nursing for 1 or 2 days. The doctor will prescribe a milk mixture to give in addition to the breast milk. If it is impossible to consult the doctor immediately, give in addition to the breast feeding enough of a mixture suitable to the baby's age and weight to make up the amount of food which he needs. The following example shows the mother how to meet the baby's needs temporarily:

The baby is 4 months old and weighs 12 pounds. He needs 2 to 3 ounces of breast milk per pound of weight. Therefore he needs at least 12 times 2 ounces, or 24 ounces of milk in 24 hours. If he takes only $2\frac{1}{2}$ ounces from the breast at each feeding, or $12\frac{1}{2}$ ounces of breast milk a day, he is getting only about half as much food as he needs. Since half of his feeding must be supplied by a cow's milk mixture he may be given half of the mixture appropriate to his age and weight. (See p. 70.)

The other method of mixed feeding is to omit one or two breast feedings a day and replace them with a bottle feeding suitable for the baby's age and weight. This method should not be used except on the doctor's advice, for omitting a breast feeding may dry up the breasts, partly or wholly.

Babies receiving mixed feeding rarely have digestive disturbances if the cow's milk mixture is boiled.

In order to accustom the baby to taking a cow's milk mixture, because of the possibility of having to wean him rapidly later, some physicians advise the introduction of one bottle feeding a day by the fourth month of age. This may work to the advantage of the baby, in that it gives the mother a longer period for rest

or recreation and so indirectly helps to keep up her supply of breast milk. If the mother has plenty of breast milk, not more than one bottle feeding a day should be given until it is time to begin weaning, as the amount of mother's milk is likely to decrease if each breast is not emptied at least twice every 24 hours.

When boiled cow's milk feedings are added to the diet of a breast-fed baby the stools begin to change in character and gradually become more pasty, darker yellow or brownish in color, and less frequent. If the stools become loose and greenish and too frequent (more than three or four a day) or if they become hard and dry, the doctor should be consulted.

WEANING

Breast feeding should be continued until the baby is 7 or 8 months old, even if the mother has only enough milk for two breast feedings a day and the other feedings are artificial. Then, with the doctor's advice, weaning may be gradually completed in the next month or two. It is of great importance that a baby should not be fully weaned in the first 6 months of life unless it is absolutely necessary, as it is during this period of rapid growth that digestive disturbances resulting from artificial feeding are most serious. (For directions as to artificial feeding see p. 61.)

Weaning should be done gradually, and it should be completed by the end of the ninth month or the beginning of the tenth month. It is usually wise not to start weaning in very hot weather, but if necessary it can be done if it is carried on gradually, if the cow's milk mixture is carefully prepared and is always boiled, if the drinking water given to the baby is boiled, and if the doctor's directions are carried out exactly.

Insufficient reasons for weaning.

Failure to gain in weight or decrease in the supply of breast milk is not always a good reason for weaning the baby before he is 6 months old. If the mother does not have enough breast milk to allow the baby to gain weight, he should be given a cow's milk mixture in addition to breast feeding (see p. 54), and an effort should be made to increase the supply of breast milk by attention to the mother's diet and general hygiene.

Many babies are weaned unnecessarily because the breast milk looks blue or is thought to be "too thin." Breast milk is always thinner and bluer than cow's milk. Its quality cannot be determined by looking at a few drops, nor can it be satisfactorily told even by a laboratory examination. Rarely, if ever, does analysis of breast milk help. If difficulties arise during the breast-feeding period, they are much more likely to be caused by a shortage of milk than by poor quality.

Colic, spitting up, increase in the number of stools, and green stools are not in themselves causes for weaning. Menstruation may return during the nursing period, but it should not be considered a reason for weaning.

Temporary discontinuance of breast feeding.

It may be necessary for the mother temporarily to discontinue nursing the baby from the breast if she contracts an acute illness such as pneumonia or some other communicable disease. In such cases, if the mother is not too ill, it is wise to make

every effort to keep up the supply of breast milk by emptying the breasts completely by hand or by breast pump at regular intervals. During the mother's illness, while the baby is off the breast, regular feedings of cow's milk mixture should be given, prepared according to a formula given by the doctor. Breast feeding should be resumed at the first possible moment.

Early weaning.

There are only a few good reasons for permanently weaning an infant under 6 months. Among them may be classed the following conditions of the mother: Another pregnancy; any chronic illness of a debilitating nature, such as cancer, chronic Bright's disease, chronic heart disease, or severe anemia; severe prolonged infectious diseases, such as typhoid fever and tuberculosis of the lungs; and epilepsy.

A mother with active tuberculosis of the lungs should never come in contact with her baby, and therefore should neither nurse nor take care of him, because of the great susceptibility of the baby to the disease. A mother who is the subject of epileptic attacks or dementia should not be left alone with her baby; unless there is someone in the house who can take charge of the baby, it may be necessary to separate him from the mother while he is still very young, and therefore to wean him.

How to wean the baby.

Before the baby is weaned consult a physician with regard to the formula for the cow's milk mixture to be used. A mixture of cow's milk, water, and sugar, boiled, usually is satisfactory. (See p. 66.) The following plan for weaning can be used for most babies:

For a week give one feeding of cow's milk a day and three breast feedings. Then for 4 or 5 days give two feedings of cow's milk a day and two breast feedings. For the next 4 or 5 days give three feedings of cow's milk a day and one breast feeding. After that (15 to 17 days after the beginning of weaning) the baby should get no breast feedings, but should get four feedings of cow's milk a day, as well as the additional foods mentioned on pages 57-60.

Rapid weaning may occasionally be necessary. Additional substitutions of bottle feedings for breast feedings may have to be made at shorter intervals. The rapid method of weaning should not be used except for some very urgent reason. Sudden weaning, when the baby has to be taken off the breast all at once, is frequently very difficult, especially with young babies, and of course should be done only in an emergency.

When a baby 7 or 8 months old is being weaned his milk may be given him in either a bottle or a cup. If he already has had water from a bottle or a cup, he will probably like whichever one he is used to. Many babies at 8 or 9 months can learn at once to drink from a cup and thus will not need to learn to give up the bottle a few months later. *All babies should drink from a cup at 1 year.*

If the baby refuses the bottle or cup the mother must not give in and allow him to nurse. If the weaning is to be successful she must offer the cup or bottle regularly at the time decided on and must omit breast feedings according to plan. Soon the baby will be hungry enough to give in and take the cup or bottle. The mother should not get excited nor upset if the baby refuses; he will finally yield

ADDITIONAL FOODS

As the baby grows older other foods are added to his diet to provide those food elements that milk does not supply in adequate amounts. The foods that the baby needs during his first year, in addition to breast milk, are as follows:

Orange juice or tomato juice, or certain other fruit juices, given chiefly to supply vitamin C, the factor that prevents scurvy.

Cod-liver oil, given chiefly because it supplies vitamin D, the factor that prevents rickets.

Egg yolk, given chiefly because it supplies iron.

Cereals and bread, given chiefly because they supply starch and minerals. Dark wheat cereals and bread are especially valuable for minerals, vitamin B, and roughage.

Dark-green leafy vegetables, given chiefly because they supply iron. These and other vegetables such as carrots, peas, and string beans supply other minerals and vitamins A, B, and C.

Stewed fruits, such as prunes, apricots, and apples, given chiefly because they help to regulate the bowels. These fruits also supply iron and other minerals and vitamins as well as roughage.

Potatoes, given chiefly because they supply starch and minerals.

Fruit juices.

Orange juice (strained) or tomato juice or other source of vitamin C should be given before the end of the first month. The juice may be fresh or canned; tomato juice may also be obtained by straining the pulp of fresh or canned tomatoes.

If orange juice is used, begin with 1 teaspoonful a day. Gradually increase the amount until by the third month and thereafter 2 tablespoonfuls are given twice a day. Orange juice may be diluted with an equal amount of cool boiled water.

If tomato juice is used, give twice as much as you would of orange juice. Begin with 1 teaspoonful twice a day and increase until by the third month 4 tablespoonfuls are given twice a day. Tomato juice is given without water.

Grapefruit juice or lemon juice—but not prune juice—may be given instead of orange juice. Either fresh or canned juice may be used. Grapefruit juice and lemon juice are used in the same amounts as orange juice. They may be diluted with an equal amount, or more, of boiled water, and may be sweetened. Pineapple juice may be used. If fresh pineapple juice is used, give twice as much as you would of orange juice; if canned, give three times as much. Pineapple juice need not be diluted.

Occasionally fruit juice causes a digestive disturbance. If it is certain that the disturbance is due to a particular fruit juice, another juice may be given, or, if the baby is breast fed, juice may be omitted for a few weeks.

*Cod-liver oil.*¹

Cod-liver oil should be begun before the end of the first month, preferably at 2 weeks. Begin with $\frac{1}{2}$ teaspoonful once a day and increase to $\frac{1}{2}$ teaspoonful

¹ Other substances containing vitamin D may be ordered by the doctor instead of cod-liver oil. They should never be given except under a doctor's direction.

twice a day at 3 weeks. At 1 month the amount may be increased to 1 teaspoonful twice a day. This amount may be given until the baby is 3 months old, when it may be increased to $1\frac{1}{2}$ teaspoonfuls twice a day. Continue this amount throughout the first 2 years. Use pure plain cod-liver oil which the label shows to contain at least 85 United States Pharmacopoeia units of vitamin D per gram.

Cod-liver oil, like direct sunlight, prevents rickets. In climates where children cannot have enough direct sunlight the year around, cod-liver oil or some other substance containing vitamin D should be given regularly throughout the first 2 years of the child's life.

How to give cod-liver oil to a little baby.—With the baby lying across her lap with the head higher than the feet, the mother pours out the cod-liver oil in a spoon held in her right hand. With her left hand she opens the baby's mouth by pressing the cheeks together with her thumb and fingers. The oil may then be given *very gradually*. If his mouth is not held open until the oil entirely disappears the baby may spit out what is left. The mother must not let him know by her facial expression that she does not like the smell of the oil because that will teach him not to like it. She must take for granted that he will like it even if she herself does not. The cod-liver oil may be followed by orange juice, but it is better not to try to disguise the taste of the oil by adding anything to it. If it is given regularly the baby will accept it and like it as he does other foods. As he grows older he can take the oil sitting up.

Keep a special towel or two, or use paper towels for protecting the baby's clothes, as cod-liver oil leaves a stain; or, better, give the oil when the baby is undressed for the bath or for bed.

Cereals.

Cooked cereals, such as farina or oatmeal, or other kinds, may be started when the baby is 4 months old. The darker-colored cereals should be used frequently. Begin with 1 or 2 tablespoonfuls just before the 10 a. m. nursing and increase until the baby takes 4 or 5 tablespoonfuls twice a day when he is 7 months old.

A satisfactory recipe for cereal is as follows:

Water, 8 ounces.

Farina, 2 level tablespoonfuls (or oatmeal, $\frac{1}{4}$ cup).

Salt, $\frac{1}{4}$ teaspoonful.

Bring the salted water to a boil and sprinkle in the cereal. Stir until the mixture comes to a boil again. Transfer to a double boiler and cook 45 minutes with the water bubbling in the lower section of the boiler.

The mixture should be thin enough to run off the end of a spoon. If it is too thick it may be thinned by adding boiling water, or if the baby is artificially fed part of the milk may be poured over the cereal. As the baby grows older the cereal should be made thicker so that he may learn to take semisolid foods.

Egg yolk.

Egg yolk may be added to the baby's diet when he is 4 months old. Some physicians add it in the third month or even earlier. The egg may be soft boiled or hard boiled and mashed.

The first time egg yolk is given, give a very small amount (one-fourth teaspoonful or less) at the 2 p. m. feeding and increase the amount gradually each day.

A very few babies are made sick by eggs. If your baby seems sick after he first gets egg yolk, do not give it again until you have told the doctor about it.

Vegetables.

Vegetables, cooked and mashed through a strainer, should be started when the baby is 5 months old and given once a day at the 2 p. m. feeding. Give a green leafy vegetable such as spinach, chard, beet greens, or cooked lettuce two or three times a week. On the other days give carrots, green peas, green lima beans, asparagus, or string beans. Canned vegetables prepared by approved methods in the canning factory may be used.

Begin by giving 1 teaspoonful of mashed vegetable once a day and increase the amount fairly rapidly to 1 tablespoonful when the baby is 6 months old, 2 tablespoonfuls when he is 7 months old, and 3 tablespoonfuls when he is 8 months old. From this time on give 3 tablespoonfuls daily. When the baby is 1 year old he may have also summer squash, Hubbard squash, celery, beets, cauliflower, kale, and cabbage.

Mothers can often save time in preparing the baby's meals and give the baby a greater variety by using some of the vegetables cooked for the family table. The length of cooking will vary with the kind of vegetable and its age. It is important to boil vegetables only long enough to make them tender (test by pricking with a fork). It is also well to use only a small amount of water that has been lightly salted (not more than one-fourth teaspoonful of salt to 1 cup of water). Soda, fat, pepper (or other seasoning) should not be used. For cooking green-colored vegetables and cauliflower use an uncovered pan. It is usually not necessary to add any water to greens because sufficient water clings to the leaves after washing. Force the cooked vegetables through a sieve or strainer before feeding them to the baby. The water in which vegetables are cooked contains valuable minerals and vitamins and should therefore be served with the vegetables.

When a baby is 10 months old, baked white potato (2 tablespoonfuls) may be given three or four times a week at the 2 p. m. feeding. After a month or so he may have potato every day, but it must not take the place of green vegetables. If a child does not eat the green vegetables offered him, it is wise to withhold potatoes.

Bread.

After the baby's first tooth has come, at meal times give him bread dried in the oven, or zwieback. If commercial zwieback is used, it is better to buy the unsweetened kind.

Fruits.

Bananas provide sugar in a form easily digested by the infant and are also a good source of several vitamins. Only thoroughly ripened bananas which have yellow skins flecked with brown and soft pulp should be given to babies. The banana should be mashed and fed to the baby with a spoon. The doctor will tell you at what age to give bananas to the baby.

Applesauce, apricot or prune pulp, and some other stewed fruits such as peaches, passed through a sieve or strainer, may be given once a day beginning when the baby is 9 months old. Prunes and apricots should be soaked all night and cooked until soft enough to mash through a strainer.

TEACHING THE BABY TO EAT SOLID FOODS

When you give the baby his first taste of cereal you are confronting him with the first of a series of new experiences. He will eventually meet these with satisfaction and enjoyment but they are as yet entirely unknown to him. Much of his future health, both physical and mental, depends on how you teach him to meet new experiences.

Up to the age of 5 months, when most babies should begin to eat semisolid foods, the average baby has never taken any food except liquids and knows but one way of satisfying his appetite—namely, sucking, from which he gets his greatest satisfaction. When you put a small amount of cereal into his mouth he does not know what to do with it. When the spoon touches his lips it at once stimulates sucking movements, but sucking movements do not necessarily result in his swallowing the cereal. They are more likely to result in his spitting it out, not willfully, but because he does not yet know how to swallow it.



He has learned to like cereal

If the cereal stays in his mouth, you can see him feeling it with his tongue, turning it over, finding out for himself

what it is. His face often shows an expression of surprise or curiosity. If now you will encourage him by looking pleased and speaking of the "nice cereal" and by telling him to "swallow the cereal," you will let him see that you are pleased with his attempt. If he pushes it out of his mouth with his tongue, do not look surprised nor scold him—say nothing. Give him another small portion to try again. Do not laugh at him because he makes funny faces. Treat the situation as a serious but pleasant lesson in eating. Praise him for trying; do not scold him for not doing it right the first time. He will thus learn to associate eating with pleasant words and looks. Remember that it is a new experience to him.

When giving a new food, give only a small amount—two or three tastes the first day and four or five tastes the second day. Gradually the baby will get used to the new food and learn to swallow it. If he continues to make faces and push it out, it is because it is still new to him, not because he does not like it. He must learn how to eat it. Whether he learns to like it or not depends upon whether he learns to associate pleasure and satisfaction with eating it. This association depends largely upon your attitude. Take for granted that he will like every new food. Offer it to him in small amounts every day until he eats it well. Never ask

him whether he likes it. Do not say in front of him that you do not think he likes it. Do not let the expression of your face show that you think he does not like it. Do not suggest to him in any way that he may not like it. A little baby is not too young to understand your attitude, even though he may not understand your words.

If the vegetables given the baby during the first year are not put through too fine a sieve they will provide an introduction to solid foods. By allowing the baby to become accustomed during the first year to eating some foods that are not in liquid form, later difficulties of feeding may be avoided.

Many babies learn very quickly and well to eat new foods, but some babies learn slowly. Do not be anxious nor worried if your baby is slow in learning or if he refuses to eat. If you are, the baby will know it, and he will soon learn to get extra attention from you by continuing to refuse. All babies want attention, and this is one of the ways in which they get it. Be patient and persistent. Do not coax. If the baby refuses to eat a food, take the food away without showing any excitement, but offer the same kind of food every day until he learns to take it. Always give the new food before the nursing or the bottle feeding, which the baby likes. If a baby 8 or 9 months old persistently refuses a new food, it may become necessary to keep his milk or other food that he likes away from him for several feedings until he eats the new food. (See Feeding habits, p. 40.) Even under these circumstances do not get excited nor coax, but let him understand plainly that when he eats a little of the new food he may have his milk. Give plenty of water when you are withholding milk. Do not make his mealtime unhappy by scolding him and forcing him to eat foods that he has not yet learned to eat, but let him go without his other foods until he is hungry enough to eat a little of the new one. Praise him and then give him his milk.

A baby can learn to like all the foods that are good for him. He will not cry for foods that he has never tasted, so do not give him tastes of foods that you know are not good for him.

ARTIFICIAL FEEDING

Every baby should be under the supervision of a doctor, particularly when artificial feeding is begun.

During the first 6 months of a baby's life there is no perfect substitute for breast feeding. Therefore no baby should be taken off the breast during this time unless there is a very good reason (see p. 55). After the baby is 6 months old artificial feeding can be begun more safely, but it is best that a baby should be at least partly breast fed until he is 7 or 8 months old.

The most important problems in connection with artificial feeding are: (1) The choice of a good milk supply; (2) the planning of the milk mixture so that it may be adequate in quantity and quality; (3) preparation of the milk mixture so that it may be safe and digestible. The problem of the milk supply may be met by buying a good grade of milk (preferably from a mixed herd) that has been pasteurized. Cow's milk is most commonly used, but in some sections of the country

goat's milk is abundant and may be used. The doctor should decide upon the ingredients of the feeding and upon the amounts to be used. It is the consensus of opinion among child specialists today that any milk or milk mixture fed to a baby should be *boiled* to render it absolutely safe and at the same time more digestible.

WHAT MILK TO USE FOR BABIES

Fresh milk.

In cities and towns a good grade of pasteurized milk should be bought. In places where pasteurized milk cannot yet be had, only bottled milk from tuberculin-tested cows, produced and handled under good conditions by healthy workers (see p. 64), should be used. As a rule it is better to use milk taken from a herd rather than from a single cow, since that from a herd is more uniform in quality. Milk averaging not more than $3\frac{1}{4}$ to 4 percent fat is best for babies. All milk should be boiled.

Canned milk.

Canned whole milk, either evaporated or dried, may also be used for infant feeding.

Evaporated milk is whole milk cooked until reduced to less than half its original bulk and canned *without the addition of sugar*. The long cooking makes evaporated milk a very digestible and safe form of milk. Before using a can of evaporated milk, pour boiling water over the top, and in the same way sterilize a sharp instrument (such as an ice pick), then punch two holes, one on each side of the top of the can, and pour out the required amount of milk. After the can is opened the contents must be kept on ice and must be used within 24 hours. The milk should be diluted with boiled water according to the directions on the can and then used as if it were fresh milk, sugar and boiled water being added according to the doctor's formula. As it was well cooked before being canned it need not be boiled.

Dried milk or milk powder is manufactured by removing water; nothing is added. Commercial dried milks vary in composition according to the kind from which they are prepared—whole, skimmed or partly skimmed, sweet or sour. After a can has been opened it should be kept tightly covered and should be put in a cool place away from dust. Scrupulously clean utensils should be used to dip it out and prepare it for use. The powder should be made liquid by adding enough water (see directions on the package) to give the mixture the value of the liquid milk from which it was made—whole milk, skimmed milk, or half-skimmed milk. It may be used then as if it were fresh milk—water and sugar being added according to the doctor's formula—and boiled.

Dried milk and evaporated milk are very convenient to use when traveling by train or automobile and to use in a new locality before the source of a good fresh-milk supply has been selected.

In parts of this country and in certain foreign countries where the supply of fresh milk cannot be depended on or is known to be poor some type of canned milk should be used.

Other forms of milk.

Some doctors recommend buttermilk or lactic-acid milk for certain babies. These should be given according to the doctor's directions.

Milk (fresh pasteurized, evaporated, or dried) may be fortified with vitamin D in a variety of ways. When the milk contains (as shown on cap and label) as much as 400 United States Pharmacopoeia units of vitamin D to the quart (for evaporated or dried milk, 400 units to the quart after water has been added) it is commonly believed that 1½ pints daily is adequate to prevent the development of rickets in most babies. Many physicians believe, however, that milk containing even as much as 400 units of vitamin D should not be relied on as the only source of this vitamin.

PROPRIETARY OR PATENT INFANT FOODS

There are two kinds of proprietary or patent infant foods. One kind, commonly called a "milk modifier," contains no milk. It consists largely of sugar and should be used only as sugar and not as a substitute for milk. This type of patent food may be added to milk as a substitute for other sugars^o only under a doctor's order. Another kind contains dry milk, sugar, and other ingredients and is not intended to be mixed with liquid milk. To some foods of this type important vitamins have been added. Most patent foods of this second kind contain a great deal of sugar, and for this reason a baby may like them. A high proportion of sugar may be desirable under certain conditions, but the average baby does better on a diet in which the doctor can regulate at will the proportion of sugar, by reducing or increasing the amount added to fresh milk, rather than on a feeding in which the amount of sugar is fixed, as in patent foods.

Proprietary foods are expensive. If the sugar and starch that they contain are bought separately and added to fresh milk, the total cost of the feeding is much less and the results usually better. No proprietary food should be given to a baby except under the direction of a doctor.

THE PROBLEM OF A GOOD FRESH-MILK SUPPLY

The problem of the milk supply varies greatly, depending on whether one lives in a large city, a small city or town, or a village or rural district. In most large cities and in many small cities and towns, laws have been passed regulating the production and care of all milk sold and establishing standards for certain grades of milk. These standards take into consideration the composition of the milk (especially the percentage of fat), the conditions under which it is produced, the number of bacteria in it at the time of delivery, and whether it is to be sold raw or pasteurized. Several grades of milk are on the market in cities, but the standards for a given grade are not altogether uniform from city to city.

Milk labeled "certified" has been produced under such good conditions that it meets the requirements of a medical milk commission. These requirements include cleanliness of cows, barns, dairy, and milk handlers, certain standards of washing and sanitary facilities, medical inspection of milk handlers, veterinary inspection of cows—including tuberculin testing of the cows every 6 months—and a low

bacterial count in the milk. Certified milk, however, is expensive. It is usually sold raw but is better if pasteurized (see p. 65).

Grade A milk is milk from tuberculin-tested cows, which is produced under very good conditions and which has a low bacterial count. Grade A milk, either pasteurized or raw, is sold in most cities and towns.

Other grades of milk are of poorer quality and have higher bacterial counts.

Bottled milk should always be bought, as "dipped" milk, dispensed from a large container, is likely to be contaminated.

In villages and rural districts where milk is supplied from small herds or single cows, public regulation of production and care of the milk is more difficult. It is as important, however, to regulate the supply of milk in small towns and rural districts as in cities, because the majority of epidemics of milk-borne diseases such as typhoid fever, septic sore throat, and scarlet fever occur in small towns. All milk-borne epidemics, whether in cities, towns, or villages, are preventable if the milk supply is properly safeguarded.

All milk, pasteurized or raw, should be boiled before being fed to babies.

CARE AND HANDLING OF MILK ON THE FARM

Milk is a very perishable food and is easily contaminated with disease germs from cows or from human beings. As much care should be taken with milk which is to be used on the premises or for distribution to neighbors as is taken in the larger dairies.

Milk should be chilled immediately after milking and kept clean, cold, and covered until delivery. It should be taken only from healthy animals. A sick animal should be immediately isolated and its milk discarded. Animals should be well fed and well cared for in clean, healthful surroundings. Well-built, well-aired stables are necessary. The udder and teats of the cow should be washed and wiped dry before milking. This prevents dust and hair from dropping into the pail during the milking.

Cows are very susceptible to tuberculosis, and if a cow has this disease the milk may be contaminated. If such milk is given raw to babies they may develop tuberculosis, which in babies is even more serious than in adults. If the owner is to be certain that the herds or even single animals are constantly free from tuberculosis, they should be examined and tested every 6 months. Undulant (Malta) fever is another disease which may exist in the cow and which the baby can acquire from the milk. Goat's milk as well as cow's milk may contain the germs of tuberculosis or undulant fever if the animal is infected. To safeguard the baby against these infections the milk should always be boiled.

Milk handlers.

Milk should be handled only by perfectly healthy persons. If a milk handler has tuberculosis, septic sore throat, typhoid fever, scarlet fever, or diphtheria, he may contaminate the milk and be the cause of a severe epidemic if the milk is consumed raw. Frequent examinations of milk handlers by physicians should be required as part of the routine. The milkers should wash their hands with soap and dry them carefully before milking. Milking with wet hands is almost

certain to carry impurities into the milk. A clean washable suit should always be worn while milking. The milker should be very careful not to raise dust nor permit anything to fall into the milk.

Milk utensils.

The pail, strainers, milk cans, and all other utensils should be washed clean and sterilized by boiling or with steam before use.

The water used in washing the utensils and bottles, the udder of the cow, and the hands of the milker—everything touching the milk—must be clean and uncontaminated by disease-producing bacteria. Serious outbreaks of disease have been caused by use of contaminated water for washing.

Refrigeration.

After milking, the milk should be cooled quickly by placing the cans in a cooler or in cold water. Milk should be kept at 50° F. or below but not frozen.

Bottles.

The bottles should be thoroughly washed and sterilized daily. Clean caps should be used. The type of cap which covers the whole top of the bottle is the best, as it insures perfect cleanliness of the lips of the bottle over which the milk flows. When milk is to be used on the premises where it is produced it should be kept in sterilized, covered bottles or glass jars.

PASTEURIZATION

Because of the great danger of transmitting diseases through milk, all milk—even certified milk—should be properly pasteurized before it is delivered to the householder. Proper pasteurization—heating for 30 minutes at a temperature that kills disease germs (142° to 145° F.)—is necessary to make milk safe. It does not make poor milk a good food, nor does it justify the use of dirty milk—the quality and conditions of production should be as good for milk that is to be pasteurized as for milk that is to be sold raw—but it adds an important factor of safety to any milk. In some small cities and towns conditions of production are often so insanitary that pasteurization is doubly necessary if the milk is to be given to babies. Milk should not be used for babies more than 36 hours after pasteurization.

Pasteurization does not take the place of boiling milk before giving it to a baby. All milk given to a baby should be boiled.

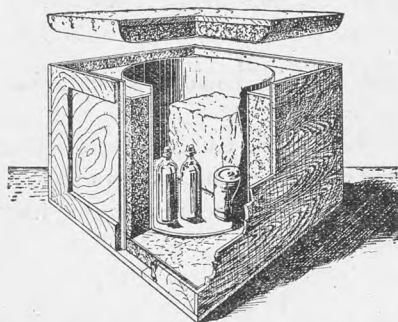
CARE OF MILK IN THE HOME

Milk must be given proper care after it is delivered. If frozen it may disagree with some infants. If the frozen milk must be used, pour off the cream after thawing and boil the milk. This will usually make it digestible.

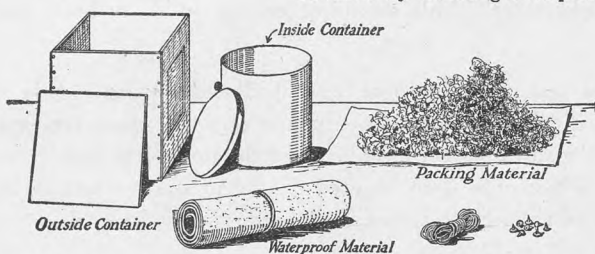
If allowed to stand in the sun on the doorstep or in a warm kitchen, milk will spoil. Immediately after delivery the bottles of milk for the baby should be placed in the ice box, where the temperature should be 50° F. or below.

An ice box to hold the baby's milk can be made at home if there is no other place to keep ice. (Instructions for making such an ice box have been prepared

by the Bureau of Maternal and Child Welfare of the District of Columbia Health Department and may be obtained from the Children's Bureau.)



If ice is not available, the bottles of milk may be placed in running spring water or in a springhouse or well if the water is sufficiently cold. The bottles must be covered with water up to the neck, but care should be taken to wet the caps. In cool climates the bottles may be placed in a can or pail of water in an open window on the cool side of the house or in the cellar. If the bottle is placed in a shallow pan of water and covered by winding a strip of cloth around



Sectional view of home-made ice box and material for making it.

it, with one end of the cloth in the water, the damp cloth will keep the bottle of milk cool.

If the cap of the bottle does not cover the edges of the bottle, before milk is poured out the cover or cap of the bottle should be wiped off so that no dust may fall into the milk when the cap is removed, and the edge of the bottle or jar should be wiped off with a clean dish towel wrung out of hot water. All bottles and utensils and the ice box itself must be kept scrupulously clean. Milk bottles must not be used for any purpose but to hold milk.

THE MILK MIXTURE

Artificial feeding should be planned with the advice of a doctor. His advice is especially important during and after the weaning period. If the baby is not weaned until after he is 6 months of age, adjustment to cow's milk feeding will probably be made easily. If, however, weaning has had to take place earlier the feeding should be even more closely supervised by the doctor. It is more difficult to feed a young baby successfully on a cow's milk mixture than an older one, and the plan for this feeding often requires the doctor's most careful judgment.

No single method of feeding can possibly meet the needs of all infants. The methods given in the following pages are adaptable to the needs of most well infants:

Cow's milk (or goat's milk) should be the principal food of the baby who is not being nursed. A boiled mixture of cow's milk (whole), water, and sugar—the amounts varying according to the doctor's directions—is usually suited to the baby under 9 months of age. After the baby is 9 months old and sometimes

much earlier cow's milk (whole) can usually be given without being mixed with water and sugar; it should be boiled.

For the very young baby it is usually better to use milk that does not have a very high percentage of fat, not more than 4 percent. Milk from Jersey and Guernsey cows is sometimes too rich for young babies. If used, it should have about half the cream removed.

Importance of boiling milk mixture.

It is of utmost importance to any baby who must be artificially fed that the milk mixture be boiled to make it safe. Boiling milk kills all the disease germs that the milk contains. It also makes milk more digestible. The curds formed in the baby's stomach in the process of digestion of raw cow's milk are apt to be large and hard. They are frequently found undigested in the baby's stool. Such undigested raw-milk curds found in stools look very much like white or yellowish lima beans. After milk has been boiled for 3 minutes in a single boiler or cooked for 20 minutes in a double boiler it is made more digestible. The curds that are formed in the baby's stomach from boiled milk are small and soft and more like the curds from breast milk. When a baby is fed boiled milk no large tough curds appear in the stools. Because boiling makes milk both safe and more digestible, many of the digestive disturbances and other difficulties of artificial feeding disappear when this procedure is rigidly followed in preparing the baby's feedings. (See p. 72 for preparation of feedings.) It is perhaps the one rule that can be laid down for all artificially-fed babies. The constipation that occasionally accompanies the use of boiled milk is unimportant in comparison with the more serious disturbances that may follow the use of raw milk. (See p. 42 for dealing with constipation.)

Planning the formula.

To plan a formula intelligently for an artificially-fed baby the following points should be varied according to the age and weight of the baby:

1. The quantity of milk to be used in the total amount of milk mixture given in 24 hours.
2. The quantity of sugar to be used in the total amount of milk mixture given in 24 hours.
3. The number of feedings a day and the interval between feedings.
4. The amount of milk mixture to be given at each feeding.
5. The total amount of milk mixture to be given in 24 hours (amount at each feeding multiplied by the number of feedings).
6. The total amount of water which must be added to the milk to bring the quantity up to the total amount of mixture required.

1. *Quantity of milk.*—The baby on the first day of life is usually given water, sweetened or unsweetened. (See p. 45.) On the second and third days of life milk is begun—1 ounce of milk for each pound of the baby's weight; that is, a 7-pound baby gets 7 ounces of milk in 24 hours, with water and sugar added as described on pages 68 and 69.

From the fourth to the seventh day a baby needs $1\frac{1}{4}$ to $1\frac{1}{2}$ ounces of milk daily for each pound of his weight.

During the second, third, and fourth weeks the average baby needs not less than $1\frac{1}{2}$ ounces of milk daily for each pound of his weight.

From the beginning of the second month to the end of the ninth month most babies need $1\frac{3}{4}$ to 2 ounces of milk daily for each pound of their weight. No baby should be given more than 2 ounces of milk per pound or more than 32 ounces (1 quart) of milk in 24 hours. When the baby is 9 months old he will be taking a variety of other foods, so that it is not necessary to increase the amount of milk further. Some doctors prefer to give the water between the feedings rather than in the formula after the baby is 6 months old. In any case, after the beginning of the tenth month, whether the baby has been breast fed or artificially fed, he may be given daily 32 ounces of cow's milk (boiled) unmixed with water or sugar. Some of this milk may be used in cooking the cereal or poured over it.

2. *Kind and quantity of sugar.*—Several kinds of sugar are commonly used in feeding babies: Common granulated sugar, mixtures of malt sugar and dextrin, corn sirup, and milk sugar. Granulated sugar and corn sirup are satisfactory for most babies and are the cheapest sugars. One level tablespoonful of granulated sugar or corn sirup weighs the same as $1\frac{1}{2}$ tablespoonfuls of malt sugar or of milk sugar; therefore if malt sugar or milk sugar is used, one and one-half times as much will be needed as of granulated sugar or corn sirup.

During the first week of life the average 7-pound baby will need 1 level tablespoonful of granulated sugar added to the whole day's allowance of milk mixture. During the first month this may be gradually increased to 2 level tablespoonfuls, during the second month to $2\frac{1}{2}$ level tablespoonfuls, and during the third or fourth month to 3 level tablespoonfuls. The average baby will not require more than 3 tablespoonfuls of granulated sugar a day at any time, or $4\frac{1}{2}$ tablespoonfuls of malt sugar or milk sugar.

At the beginning of the seventh month the amount of sugar should be decreased gradually, until at the beginning of the ninth month no sugar will be added to the milk.

3. *Number of feedings and intervals between feedings.*—The average baby will do well if fed every 4 hours regularly from birth. This interval between feedings should be used and adhered to unless the doctor orders more frequent feedings. The very young baby may need six feedings in 24 hours—usually given at 6 a. m., 10 a. m., 2 p. m., 6 p. m., 10 p. m., and 2 a. m. The baby should be awakened for each feeding except the one at 2 a. m. The 2 a. m. feeding may usually be omitted by the time the baby is 2 months old, or sooner if he is gaining well. Five feedings are therefore all that will be necessary, and this number will be continued until he sleeps through the 10 p. m. feeding, usually at 4 or 5 months. After this give only four feedings a day, according to the schedule arranged to suit the individual family.

4. *Amount of milk mixture to be given at each feeding.*—The amount of milk mixture given to a baby at each feeding is small at first and is gradually increased as the baby gets older. The baby who is fed at 4-hour intervals receives larger feedings than the one who is fed at 3-hour intervals. Babies vary considerably

in the number of ounces which they will take at a feeding. For all babies it is well to begin with small amounts, 2 to 2½ ounces, and increase gradually month by month up to 8 ounces at a feeding as a maximum. The baby should take the feeding in 15 to 20 minutes.

<i>Baby fed at 4-hour intervals</i>		<i>Ounces</i>
First week		2-2½
Second, third, and fourth weeks		3-4
Second month		3½-5
Third month		4-6
Fourth month		5-7
Fifth and sixth months		6-8
Seventh to twelfth month		7-8

5. *Total amount of milk mixture in 24 hours.*—It is important to calculate the total amount of mixture that should be given to a baby in a day in order to know how much water must be added to the milk to make up the total quantity of the feeding for the 24-hour period. This is done by multiplying the amount that has been decided on for each feeding by the number of feedings. For example, if a baby who is 4 months old has 5 feedings of 6 ounces each, the total amount for 24 hours will be 30 ounces.

Amount of water to be added to milk.—After calculating the total amount of milk mixture to be given in 24 hours, subtract from it the amount of milk to be given during the same time; the result will be the amount of water that must be added.

For example, in planning the feeding for a 4-month-old baby weighing 12½ pounds, the following subtraction will be made:

Total amount of mixture given in 24 hours: Amount given at each feeding (6 ounces) multiplied by the number of feedings (5)	30	<i>Ounces</i>
Milk required: 1¾ ounces multiplied by the baby's weight (12½ pounds)	22	
Water to be added	8	

Many doctors give milk undiluted with water from the sixth or seventh month on. The water is then given between the feedings. This plan is especially good if the infant is small and will not take the calculated amount of the formula (milk and water), and also if the infant is slow in taking the full amount at each feeding.

PLAN FOR ARTIFICIAL FEEDING OF A WELL BABY

The following plan for the artificial feeding of a well baby is given as an example which may assist the mother in following her doctor's instructions, not as a substitute for them. The doctor should be consulted very frequently with regard to the artificial feeding of any baby.

The baby should be weighed frequently (see p. 9) and the formula for his feeding should be adjusted with his increase in weight, not merely with his increase in age. The weights given in this section are intended as examples, not as indications of the weight a baby should have at the different ages.

The formulas for milk mixtures have been calculated according to the instructions on pages 67-69. They can be altered to suit the individual baby by following

the instructions given there. The milk mixtures should be boiled. (For a discussion of the foods suggested in addition to the milk or milk mixture see p. 57.)

The term whole milk is used to mean fresh cow's milk, or unsweetened evaporated milk mixed with an equal quantity of water, or dried whole milk made up according to directions on the can to the equivalent of fresh milk.

First day—A baby weighing 7 pounds

Boiled water, 10 ounces. Granulated sugar, 1 level tablespoonful.
Offer $\frac{1}{2}$ to 2 ounces every 4 hours (6 feedings in 24 hours).

Second to seventh day—A baby weighing 7 pounds or slightly less

Whole milk, 8 ounces. Granulated sugar, 1 level tablespoonful. Water, 7 ounces.
Offer $2\frac{1}{2}$ ounces every 4 hours (6 feedings in 24 hours).

A 1-week-old baby weighing 7 pounds

Whole milk, 10 ounces. Granulated sugar, $1\frac{1}{2}$ level tablespoonfuls. Water, 5 ounces.
Offer $2\frac{1}{2}$ ounces every 4 hours (6 feedings in 24 hours).

A 2-week-old baby weighing $7\frac{1}{4}$ pounds

Whole milk, 11 ounces. Granulated sugar, 2 level tablespoonfuls. Water, 7 ounces.
Offer 3 ounces every 4 hours (6 feedings in 24 hours).

Orange juice, 1 teaspoonful a day (or tomato juice, 1 teaspoonful twice a day; see p. 57).

Cod-liver oil, $\frac{1}{2}$ teaspoonful once a day.

A 3-week-old baby weighing $7\frac{1}{2}$ pounds

Whole milk, 12 ounces. Granulated sugar, 2 level tablespoonfuls. Water, 6 ounces.
Offer 3 ounces every 4 hours (6 feedings in 24 hours).

Orange juice, 1 teaspoonful twice a day (or tomato juice, 2 teaspoonfuls twice a day).

Cod-liver oil, $\frac{1}{2}$ teaspoonful twice a day.

A 1-month-old baby weighing $7\frac{3}{4}$ pounds

Whole milk, 14 ounces. Granulated sugar, $2\frac{1}{2}$ level tablespoonfuls. Water, 6 ounces.
Offer 4 ounces every 4 hours (5 feedings in 24 hours or, if 2 a. m. feeding is still given, use 10 ounces of water in the milk mixture and give 6 feedings).

Orange juice, 2 teaspoonfuls twice a day (or tomato juice, 4 teaspoonfuls twice a day).

Cod-liver oil, 1 teaspoonful twice a day.

A 2-month-old baby weighing $9\frac{1}{2}$ pounds

Whole milk, $16\frac{1}{2}$ ounces. Granulated sugar, 3 level tablespoonfuls. Water, 6 ounces.
Offer $4\frac{1}{2}$ ounces every 4 hours (5 feedings in 24 hours).

Orange juice, 2 tablespoonfuls twice a day (or tomato juice, 4 tablespoonfuls twice a day).

Cod-liver oil, 1 teaspoonful twice a day.

A 3-month-old baby weighing 11 pounds

Whole milk, 19 ounces. Granulated sugar, 3 level tablespoonfuls. Water, 6 ounces.
Offer 5 ounces every 4 hours (5 feedings in 24 hours).

Orange juice, 2 tablespoonfuls twice a day (or tomato juice, 4 tablespoonfuls twice a day).

Cod-liver oil, $1\frac{1}{2}$ teaspoonfuls twice a day.

A 4-month-old baby weighing 12 1/2 pounds

Whole milk, 22 ounces. Granulated sugar, 3 level tablespoonfuls. Water, 8 ounces.
 Offer 6 ounces every 4 hours (5 feedings in 24 hours).
 Orange juice, 2 tablespoonfuls twice a day (or tomato juice, 4 tablespoonfuls twice a day).
 Cod-liver oil, 1 1/2 teaspoonfuls twice a day.
 Cooked cereal, 1 or 2 tablespoonfuls once a day, usually just before 10 a. m. bottle.
 Egg yolk, once a day (for amounts when first given see p. 58), usually at 2 p. m. or 6 p. m. feeding.

A 5-month-old baby weighing 14 pounds

Whole milk, 24 1/2 ounces. Granulated sugar, 3 level tablespoonfuls. Water, 8 ounces.
 Offer 6 1/2 ounces every 4 hours (5 feedings in 24 hours).
 Orange juice, 2 tablespoonfuls twice a day (or tomato juice, 4 tablespoonfuls twice a day).
 Cod-liver oil, 1 1/2 teaspoonfuls twice a day.
 Cooked cereal, 2 to 4 tablespoonfuls once a day.
 Egg yolk, 1/2 to 1, once a day.
 Mashed vegetable, 1 teaspoonful once a day (see p. 59), usually just before 2 p. m. bottle.

A 6-month-old baby weighing 15 1/4 pounds

At this age water may be offered only between feedings or may be added to the formula. For example:

Whole milk, 28 ounces.	} or {	Whole milk, 28 ounces.
Granulated sugar, 2 level tablespoonfuls.		Granulated sugar, 2 level tablespoonfuls.
Water, between feedings only.		Water, 4 ounces.
Offer 7 ounces every 4 hours (4 feedings in 24 hours).		Offer 8 ounces every 4 hours (4 feedings in 24 hours).

Orange juice, 2 tablespoonfuls twice a day (or tomato juice, 4 tablespoonfuls twice a day).
 Cod-liver oil, 1 1/2 teaspoonfuls twice a day.
 Cooked cereal, 3 to 4 tablespoonfuls twice a day (second cereal usually before 6 p. m. bottle).
 Egg yolk, one, once a day.
 Mashed vegetable, 1 tablespoonful once a day.

A 7-month-old baby weighing 16 1/2 pounds

At this age water may be offered only between feedings or may be added to the formula. For example:

Whole milk, 28 to 32 ounces.	} or {	Whole milk, 28 ounces.
Water, between feeding only.		Granulated sugar, 1 level tablespoonful.
Granulated sugar, 1 level tablespoonful.		Water, 4 ounces.
Offer 7 to 8 ounces every 4 hours (4 feedings in 24 hours).		Offer 8 ounces every 4 hours (4 feedings in 24 hours).

Orange juice, 2 tablespoonfuls twice a day (or tomato juice, 4 tablespoonfuls twice a day).
 Cod-liver oil, 1 1/2 teaspoonfuls twice a day.
 Cooked cereal, 4 or 5 tablespoonfuls twice a day.
 Egg yolk, one, once a day.
 Mashed vegetables, 2 tablespoonfuls once a day.

An 8-month-old baby weighing 17 1/2 pounds

Whole milk, 28 to 32 ounces.	} or {	Whole milk, 28 ounces.
Offer 7 to 8 ounces every 4 hours (4 feedings in 24 hours).		Water, 4 ounces.
		Offer 8 ounces every 4 hours (4 feedings in 24 hours).

Orange juice, 2 tablespoonfuls twice a day (or tomato juice, 4 tablespoonfuls twice a day).
 Cod-liver oil, $1\frac{1}{2}$ teaspoonfuls twice a day.
 Cooked cereal, 4 or 5 tablespoonfuls twice a day.
 Egg yolk, one, once a day.
 Mashed vegetable, 3 tablespoonfuls once a day.
 Dry toast or zwieback occasionally with meals.

A 9-, 10-, or 11-month-old baby

Whole milk, 28 to 32 ounces in 4 feedings of 7 or 8 ounces each.
 Water, to be offered between feedings.
 Orange juice, 2 tablespoonfuls twice a day (or tomato juice, 4 tablespoonfuls twice a day).
 Cod-liver oil, $1\frac{1}{2}$ teaspoonfuls twice a day.
 Cooked cereal, 4 or 5 tablespoonfuls twice a day.
 Egg yolk, one, once a day.
 Mashed vegetables, 3 tablespoonfuls once a day.
 Dry toast, zwieback, stewed fruit, baked potato.
Add new articles to diet one at a time (see p. 60).

WHAT MILK MIXTURE TO USE DURING WEANING

When a breast-fed baby is to be weaned, it is well to begin with a milk mixture that is not full strength for his age, increasing soon to the full strength; at the start of weaning, the amount of milk required is calculated on the basis of not more than $1\frac{1}{2}$ ounces a day for each pound of the baby's weight. As has been told in the section on Weaning (p. 55), only one artificial feeding a day is given at the beginning of weaning, the other three feedings being given at the breast. The amount of milk to be given in this single feeding can be found by multiplying $1\frac{1}{2}$ ounces by the number of pounds in the baby's weight and dividing the resulting number of ounces by the number of feedings (usually four) that he receives during the day.

For instance, if an 8-month-old baby, weighing $17\frac{1}{2}$ pounds, is to be weaned, find the amount of milk needed for one feeding as follows: Multiply $1\frac{1}{2}$ ounces by $17\frac{1}{2}$, which gives $26\frac{1}{4}$ ounces. Divide this by 4, the number of feedings received by an 8-month-old baby. The result, about $6\frac{1}{2}$ ounces, is the amount of milk to be given in the one artificial feeding at the beginning of weaning.

As an 8-month-old baby should receive 7 to 8 ounces of milk mixture at each feeding, enough water should be added to make up 7 or 8 ounces— $\frac{1}{2}$ or $1\frac{1}{2}$ ounces of water.

As time goes on, and the baby gets used to cow's milk, not only is he given more artificial feedings a day, as shown on page 62, but he is given a stronger milk mixture. The mixture is gradually strengthened until the baby receives 28 to 32 ounces of whole milk a day, unmixed with sugar and water, as suggested in the section above.

PREPARATION OF MILK MIXTURE

Equipment.

If possible, a mother should buy the proper utensils for preparing artificial food, and these utensils should be kept together and not used for anything else. To do this may cost a few dollars extra, but it will save much time and trouble every day. The following utensils are needed:

Nursing bottles holding 8 ounces. It is cheaper to buy them by the dozen. At least there should be two or three more than the number of feedings in 24 hours, as they will be used for water also.

Nipples. Freshly boiled nipple for each feeding and for each bottle of water. (At least a dozen.)

Two small, wide-mouthed, covered glass jars such as mason jars or mayonnaise jars (one for boiled nipples and one for used ones).

Teaspoon to take boiled nipples from jar (to be kept in jar with boiled nipples).

Rubber caps, rubber corks, or wax paper to cover top of nursing bottles. Rubber caps are the most satisfactory covers.

Bottle brush.

Bottle rack for holding bottles when boiling and filling them and for keeping them in the ice box. If this cannot be had, a pail or pan may be used for keeping bottles in the ice box.

Measuring glass holding 8 or 16 ounces, marked off in half ounces, for measuring milk and water (sometimes called a graduate).

Pitcher to hold milk mixture after boiling.

Tablespoon and teaspoon for measuring sugar. Accurate measuring spoons may be purchased very cheaply and are best.

Knife for leveling spoonfuls of sugar.

Two-quart saucepan for boiling milk.

Saucepan or teakettle for boiling water.

Strainer to strain milk mixture if scum forms.

Covered flat-bottomed kettle or pail, large enough to hold bottle rack and utensils to be boiled.

Long-handled spoon for removing utensils from sterilizing kettle and for stirring milk mixture.

Bottles.—A kind of bottle should be bought that can be cleaned thoroughly with the bottle brush; there should be no corners that are hard to clean. (The neck of the bottle should gradually slope into the body and the bottom should slope into the side without a sharp corner.) After each bottle is used, it should be well rinsed at once with cold water, and then filled with cold water and put in a clean place away from flies and dust until all the bottles used for the day's feeding can conveniently be washed in hot soapsuds and rinsed in clear hot water.

Nipples.—The most important thing about choosing nipples is to select the kind that can easily be turned inside out to be cleaned. It is best to buy nipples without holes and to make one hole near the top with a red-hot sewing needle. If nipples with holes are bought, it is often necessary to enlarge the holes with a large needle or hairpin heated in a flame. The hole should be large enough to allow the milk to drip rapidly when the bottle is turned upside down but not to flow in a steady stream. New nipples should be washed and boiled before use.

As every nipple must be boiled before it is given to the baby, and as a baby gets 5 or 6 bottles of milk every day and several bottles of water, it will save trouble to have at least 8 or 10 nipples on hand. They can be boiled together once a day with the bottles and other utensils. After each feeding turn the nipple inside out and rinse it in cold water or brush it out with the bottle brush, making sure that the hole is not plugged with milk. Then put it away in the jar for used nipples until time for sterilizing.

Cleanliness.

Everything that touches or comes near the baby's food should be perfectly clean. Clean milk can be spoiled by dirty handling. The mother should wash her hands before beginning to prepare the feeding. If she has a cold she should wash her hands with special care and should not cough nor sneeze over the baby's

food. A mask of soft cloth or several thicknesses of gauze tied over her nose and mouth is a wise precaution when the mother has a cold.

How to sterilize bottles, nipples, and so forth.—Every utensil that is to be used after the milk mixture is boiled must be boiled 5 minutes. This includes the bottles, nipples, strainer, mixing spoon, and pitcher into which the boiled milk mixture is measured. The glass jar that holds the boiled nipples must be boiled, as well as the teaspoon used to take boiled nipples from the jar. Utensils to be used before the mixture is boiled need only be washed.

Sterilization of the bottles and other utensils should not be done until the mother is ready to make up the day's feeding. They should be placed in water in a covered kettle or pail large enough to allow the water to cover them completely. The large mixing spoon also should be placed in the pail, the handle resting on the edge of the kettle, so that when sterilization is complete the spoon may be used to take out the articles one by one. It is convenient to have the bottles stand upside down in a rack. They should be filled with cold water and turned upside down in the rack, which is standing in the kettle of water, and the whole heated and allowed to boil 5 minutes. When sterilization is complete the rack may be lifted out and the bottles drained without being touched. After the milk mixture has been prepared and cooled, turn the bottles right side up in the rack, being very careful not to touch the neck or lip. They can be filled and placed in the ice box while standing in the rack.

If the mother has no rack the bottles should be filled with water and placed in the kettle lying on their sides with the other utensils. When sterilization is finished some of the water may be poured off and the bottles taken out with the long-handled spoon which has been boiled with them.

The nipples, as well as the rubber caps or corks for the nursing bottles, should be boiled for 5 minutes before they are used, either in a small tightly covered saucepan or with the other articles in the large sterilizing kettle. After the boiling take the nipples out of the water with the large spoon, drain them without touching them with the fingers, drop them into the empty sterilized glass jar, and then cover the jar. The nipples should be kept dry. When one is to be used take it out of the jar with a teaspoon which has been boiled and which can be kept in the same glass jar.

Preparing the feeding.

Always have a copy of the doctor's written order for the feeding pinned up in a convenient place so that you may refer to it every day. Have all utensils ready. The bottles, strainer, pitcher to hold the boiled milk mixture, and large mixing spoon should have been boiled already in the large sterilizing kettle. A single saucepan for boiling the milk mixture is usually most convenient, although a double boiler may be used.

The feeding should be prepared as soon after the milk has been delivered as possible. Take the bottle of milk from the ice box and, before removing the cap, wipe the top carefully with a clean cloth. Shake the bottle, to mix the cream well. Have at hand the sugar and any other ingredients ordered by the doctor. Measure into the saucepan the required amount of sugar in level spoonfuls,

smoothing each with a knife. Measure carefully in the graduated measuring glass the required amount of milk and of water and pour these also into the saucepan. (The total amount of mixture—milk, water, and sugar—should be noted, since during boiling some will boil away and this amount must be made up by adding boiled water.) Stir the mixture to dissolve the sugar. Place the saucepan on the stove; allow the mixture to boil (bubble) actively for 3 to 5 minutes, stirring it constantly. Take the saucepan off the stove and set it in a pan of cold water, stirring the mixture constantly. The pan of cold water will need to be changed frequently until the milk mixture is cool. Stirring the mixture while it is cooling helps to prevent scum from forming.

While the milk mixture is boiling and cooling put the graduated measuring glass into the large sterilizing kettle, which is still on the stove, and boil it for 5 minutes. When the milk mixture is cool, measure it a second time, with the sterilized measuring glass, pouring it into the pitcher that has been boiled for this purpose. If there is any scum, strain the milk mixture while pouring it into the pitcher. Then measure into it enough water, freshly boiled (and cooled so as not to break the glass), to bring up the total amount of mixture to the number of ounces noted at the first measuring. Measure the water in the measuring glass.

When filling the bottles it is better to measure the number of ounces to be given at each feeding in the measuring glass and pour this amount directly from the measuring glass into the bottle than to depend on the ounce marks on the nursing bottles, which are not always accurate.

Cover the bottles at once with rubber bottle caps or rubber stoppers or with squares of wax paper held down by rubber bands. Rubber caps or stoppers must be boiled every day before they are used.

After the bottles have been filled as they stand in the rack, place them in the ice box close to the ice.

A double boiler may be used if it is not convenient to boil the milk or milk mixture in a single saucepan. Milk cooked in a covered double boiler is held at a temperature just under the boiling point. If it is cooked for 20 minutes in this manner, disease-producing germs will be killed and also the milk will be made more digestible, as in boiling. When the water begins to boil note the time and allow the mixture to cook 20 minutes, covered tightly. Cool, strain, and measure the mixture into the feeding bottles.

GIVING THE FEEDING

Warming the feeding.

At feeding time take the baby's bottle of milk mixture from the ice box, shake to mix well, remove the rubber cap or stopper, and put on instead a sterile nipple from the covered sterile jar. The mother's hands should be freshly washed before handling the nipple. She should touch only the rim of the nipple in putting it on. Stand the bottle of milk mixture in a small deep saucepan of warm water. Special bottle warmers may be purchased, but they are no better than the ordinary saucepan. Heat the mixture rapidly. It is not necessary to wait until the water boils. Usually the contents of the bottle become sufficiently warm (100° F.) in a few minutes. Its warmth may be tested by letting a few drops trickle from

the nipple on the mother's wrist, where it should feel pleasantly warm but not hot. Shake the bottle to be sure the milk is of uniform temperature throughout before testing. The nipple should not be touched by anyone nor come in contact with anything until it reaches the baby's mouth.

If bottle feeding is to be given in addition to a breast feeding as in "mixed feeding" (p. 54) it should be prepared and warmed before the nursing is started so that it will be ready to give as soon as the nursing is finished.

How to give the bottle.

Hold the baby in a partly upright position in your lap while he is taking the bottle. Hold the bottle in place for him. The bottle should be so held that the nipple is constantly full of milk and not half full of air. If you allow the bottle to drop to a horizontal position so that air enters the nipple, the baby will suck in air, which later must be brought up. If he brings up air when lying down he is likely to spit up some of his food. This spitting up that comes from swallowing air is not vomiting. To prevent this, raise the baby carefully to your shoulder after feeding and pat him on the back with the flat of the hand for 2 or 3 minutes. He will bring up any air that he has swallowed. Then lay him down gently in his bed. Do not handle him much or quickly after a feeding, as such treatment tends to make him spit up. Even when not being fed some babies swallow air by sucking on their fingers or hands and will bring up air at any time if held up and patted on the back. Such babies should be held up regularly before feeding as well as after. Occasionally a baby needs to be raised up and patted for this purpose during a feeding.

Twenty minutes is the longest time and 5 minutes the shortest time that should be allowed for taking a bottle. If there seems to be delay about taking the feeding be sure that the hole in the nipple is not clogged. If at the end of 20 minutes the baby has not finished, remove the bottle quietly. He may refuse it because he is not well. If he is just playing with it, he will be hungry before the next feeding and take it well when the time comes. Do not give him anything but water until the next regular feeding time.

Never let a baby go to sleep over his bottle. Do not go off and leave him sucking his bottle as he may fall asleep before it is finished. Do not give him a bottle with the idea of putting him to sleep. If this is done, he will learn to associate going to sleep with his bottle; and when the time comes to wean him from the bottle it will be difficult to get him to go to sleep without it. It is best to give him his bottle while sitting or half reclining in your lap, not in his bed. After he has finished his feeding and gotten rid of the air in his stomach, put him into his bed to sleep. He should associate sleep with being put to bed and not with a bottle.

ADDITIONAL FOODS

The artificially-fed baby needs to have foods other than milk added to his diet even more than the breast-fed baby, as the tendency toward the development of deficiency diseases (scurvy, rickets, and so forth) is greater in the artificially-fed baby and he is more likely to be malnourished. The foods to be added to his diet are the same as those added to the diet of the breast-fed baby. (See p. 57.)

Cod-liver oil and orange juice (or tomato juice) should both be begun at the end of the second week. For the artificially-fed baby orange juice or tomato juice is begun somewhat earlier than for the breast-fed baby. If orange juice is used begin with one teaspoonful a day in an equal quantity of water. If tomato juice is used begin with 2 teaspoonfuls a day without water. Increase the quantities as described on page 57. The artificially-fed baby is given the same amounts of cod-liver oil as the breast-fed baby. (See p. 57.)

At the beginning of the fifth month cooked breakfast cereals and egg yolk may be begun.

During the sixth month strained or mashed vegetables may be started, and baked white potatoes at the tenth month. Potatoes are to be given not instead of other vegetables but in addition to them. (See p. 59.)

At the tenth month stewed fruit, such as apple sauce and prune pulp, may also be started.

Dry toast may be given as soon as the first teeth have come through.

DRINKING WATER

Drinking water should be offered to the artificially-fed baby frequently, just as it is to the breast-fed baby. (See p. 51.) Water should be boiled before being given to the baby, and it should not be sweetened.

STOOLS

The stools of an artificially-fed baby are different from those of a breast-fed baby. They are almost always fewer in number, frequently only one in 24 hours. The material passed is much firmer, often formed, and with slight odor. The color varies from lemon yellow, if cow's milk is the sole food, to dark or light brown if malt sugar or cereal is used. The stool should be smooth and somewhat pasty in character, as this shows that the food is well digested. It may be either formed or unformed.

Loose, green, frequent stools are symptoms of disturbance, and a doctor should be consulted at once so that some change in diet may be made. Diarrhea is often a symptom of some serious disease, and it should not be neglected. Constipation may occur in the artificially-fed baby but is not to be looked upon as a serious condition. It can nearly always be dealt with by changing the formula for the food. Ask your doctor to correct the constipation. Do not give castor oil or other cathartics except on the doctor's order. Prune juice may be given or occasionally mineral oil for short periods.

DAILY SCHEDULE

The daily schedule for the artificially-fed baby should be just as regular as for the breast-fed baby. On the whole, the same daily program can be adopted. It is of great importance to his future health that the baby learn early in life to eat cereals, vegetables, and egg yolk. (See p. 60 for suggestions on how to teach him to eat these foods and p. 6 for daily schedule.)

UNDERFEEDING

Underfeeding may mean that the baby is not getting enough of the right food or is getting the wrong kind of food. Some underfed infants sleep for short periods

and fret and cry before the regular feeding period, and others may sleep a good deal. If the baby fails to make regular gains in weight, the food needs to be increased in quantity or properly modified to suit the baby's needs or he may be sick. Consult the doctor.

OVERFEEDING

If a baby after feeding spits up, vomits, has colic, or is fretful, it may be that his stomach is overloaded. A baby's appetite will usually regulate fairly satisfactorily the quantity of food taken. If his milk mixture is a weak one he will want a large amount and may have to take more than his stomach will comfortably hold to satisfy his hunger. After he has taken a large amount of weak milk mixture he may cry either because he is still hungry or because his stomach is distended and he feels pain. He may spit up or even vomit part of the feeding. Smaller feedings containing the same amount of milk and sugar but less water will usually overcome this difficulty.

Sometimes as the bulk and strength of feedings are repeatedly increased the milk mixture will exceed the needs of a baby both in food value and in quantity, and the same signs of overfeeding may result. The baby, though taking a large amount of food, may vomit some of it and possibly make a poor gain in weight. He may refuse part of the feeding. Smaller feedings should be given so that he will be really hungry. The amount may be increased again very gradually.

SPITTING UP AND COLIC

Spitting up and colic occur in the artificially-fed baby as well as the breast-fed baby. They are usually caused by pressure of air in the stomach or of gas in the intestines or by overfeeding. The methods of treatment are the same as for the breast-fed baby. (See p. 53.)

WEIGHT

The standards for growth of the artificially-fed baby should be the same as for a breast-fed baby, but it is often more difficult to reach them. If an artificially-fed baby receives a diet such as has been outlined on pages 76-77, including all the additional foods, his growth may be satisfactory. His gain in weight may not be quite so rapid as that of the breast-fed baby, especially during the early months, and unless his diet is adjusted very carefully he may not thrive so well. An artificially-fed baby should be expected to make the same average weekly gain as a breast-fed baby. He should double his birth weight in 5 or 6 months and treble it in a year.

It is of greatest importance that an artificially-fed baby should be weighed regularly to make sure that his gain in weight is adequate. If possible he should be weighed at home once a week and the weight reported to the doctor. If this is not possible he should be weighed at regular intervals by the doctor. He should be taken frequently and regularly to a doctor trained in the care of babies. The feeding should be discussed with the doctor to insure correct modification of the formula and the addition of the proper foods at the right time.

Child-health centers are provided in many places for mothers who cannot afford to go to a private doctor for these regular weighings and consultations.

Weight—Height—Age Tables ¹

WEIGHT-HEIGHT-AGE TABLE FOR WHITE BOYS FROM BIRTH TO 1 YEAR

[Without clothes]

Height in inches	Average weight in pounds for each month of age											
	Less than 1 month	1 month but less than 2	2 months but less than 3	3 months but less than 4	4 months but less than 5	5 months but less than 6	6 months but less than 7	7 months but less than 8	8 months but less than 9	9 months but less than 10	10 months but less than 11	11 months but less than 12
17	5½											
18	6½											
19	7½	7½										
20	8	8½	9									
21	9	9½	10	10½								
22	10	10½	11	11½	11½							
23	10½	11	12	12½	13	13						
24	11½	12½	13	13½	14	14	14½					
25	12½	13½	14	14½	15	15½	15½	15½	14			
26		14	15	15½	16	16½	16½	17	16	16		
27			16	16½	17	17½	18	18	18½	18½		
28				17½	18	18	19	19	19½	19½	18½	
29					19½	20	20	20½	20½	20½	20½	
30						21½	21½	21½	21½	21½	21½	
31							22½	23	23	23	23	
32								24	24	24	24	
33										25½	25	

WEIGHT-HEIGHT-AGE TABLE FOR WHITE GIRLS FROM BIRTH TO 1 YEAR

[Without clothes]

Height in inches	Average weight in pounds for each month of age											
	Less than 1 month	1 month but less than 2	2 months but less than 3	3 months but less than 4	4 months but less than 5	5 months but less than 6	6 months but less than 7	7 months but less than 8	8 months but less than 9	9 months but less than 10	10 months but less than 11	11 months but less than 12
17	5½											
18	6½											
19	7	6½										
20	8	7½	8									
21	8½	8½	9									
22	9½	10	9½	10	10½	11	11					
23	10	11	10½	11	11½	12	12	12				
24	11	12	11½	12	12½	13	13	13	13			
25	11½	13	12½	13	13½	14	14	14	14½	14½		
26		14	13½	14	14½	15	15	15½	15½	15½	16	
27			15½	15	15½	16	16	16½	16½	16½	17	
28				16	16½	17	17	17½	17½	18	18	
29					17½	18	18	18½	19	19	19	
30					19	19	19½	20	20	20	20	
31						20	20½	21	21	21	21	
32							21½	22	22	22	22½	
33									23	23½	23½	

¹ Reanalysis of the weight, height, and age of 20,299 white boys and of 19,493 white girls under 12 months of age, examined in Children's Year (1918-19). The number of Negro boys and girls measured and weighed was not sufficiently large to provide comparable data.

HOW TO USE THE TABLES

First measure the length or height of your baby by laying him on a table which has been pushed up close to the wall. Place the baby with the top of his head touching the wall, his body and legs straight and flat on the table, and hold him still. Place a book upright against the soles of his feet and mark the spot to which his heels come. Measure the distance from the wall to the mark with a yardstick or tape measure.

Find your baby's age in months at the top of the table (boys or girls).

Find your baby's height in inches at the left-hand column of the table.

Run your finger straight across from his height to the figure in the column under his age. The number found at this point represents the average weight in pounds of babies of the same age and of the same height as your baby.

When using these tables remember that each weight figure given represents an average. If your baby's weight is a little above or a little below the average weight of babies of his height and age, he probably is within normal limits.

The Premature Baby

A BABY who is born more than 2 weeks before the end of 9 months of pregnancy is called a premature baby. He is not so well developed at birth as the baby who is born at full term. Since the eighth and ninth months of prenatal life are especially important in the growth of the baby, every effort should be made to prevent premature birth. However, in spite of such effort and for some causes that are unavoidable, a certain number of babies are born prematurely. The earlier the baby is born, the more difficult it is to keep him alive. A baby born only 2 or 3 weeks before the expected date of birth may be quite strong and little different from a full-term baby. A baby born 7 or 8 or more weeks early may be very small and difficult to save. Occasionally a baby born at full term is exceptionally small and feeble. All babies weighing less than $5\frac{1}{2}$ pounds at birth should be treated as if premature.

As the premature infant grows older he should gradually become more and more like a full-term baby. Though small, he should have good color, his muscles should be firm, and he should gradually become active and alert. He may be slower than a full-term baby in learning to do some things like holding up his head and sitting up. If he is protected from infection and gets the proper food and care he will catch up to the full-term baby in course of time. The time that this will take will depend on how many weeks before term he was born.

CARE IMMEDIATELY AFTER BIRTH

A premature baby should be given proper care immediately after birth or he may die from exposure. He should be wrapped at once in a clean, soft blanket that has been warmed. The cord should be cut and dressed with sterile gauze. Mucus should be removed from his mouth and upper throat by means of a small rubber suction bulb. He should then be placed in a warm bed, and his head should be turned to one side and lowered slightly by raising the foot of the bed. A pad of absorbent cotton covered with soft gauze should be used as a diaper.

If the baby is born at home the decision must now be made whether he is to be cared for at home or in a hospital.

Premature babies that weigh more than 4 pounds and are vigorous can usually be taken care of satisfactorily at home if the conditions are favorable and certain precautions are taken. Some smaller babies also do well at home; in fact, they are often cared for best at home unless a hospital suitably equipped for the care of such babies is available. If, however, the baby is feeble and difficulty is encountered in making him breathe, very special care is needed which can usually best be had in a hospital.

A hospital properly equipped for the care of premature babies will have a room in which these babies can be cared for separately from other babies. It will have

doctors and nurses on the staff who are trained to care for premature babies and who will be able to feed them properly. Some premature babies have cyanotic attacks (blue spells) and must be given oxygen. Oxygen is always available in a well-equipped hospital, but it may also be obtained in tanks and administered in the home, under the supervision of the doctor or the nurse.

The baby should not be taken to the hospital until his breathing is sufficiently well established to make such a trip safe. Great care should be taken to keep him warm during the trip, as chilling at this time decreases the chances of saving his life. To prevent him from losing any of his body heat he should be wrapped in several soft, clean blankets which have been warmed and he may be carried in a basket lined with warm-water bottles (115° F.). To prevent burns, a folded blanket or towel should be placed between the baby and the bottles.

If the premature baby is to be cared for at home, he should be put at once into a warm bed which has been already prepared for him in a warm room. (See p. 84 for home-made heated bed.) A physician, preferably one specially trained in the care of babies, should be called at once and his directions should be followed closely. If a nurse who has been trained in the care of premature babies can be engaged, her experience will be a great help to the mother.

The baby's temperature should be taken by rectum soon after birth. The baby should not be bathed with water. He may be given an oil bath when his temperature becomes normal (98° to 99.6° F.) and stays normal, but only if his general condition is good and the room temperature is not lower than 80° F. It is much more important to keep him warm than to give him a bath. The complete oil bath need not be given for several hours or even several days after birth.

A premature baby should be exposed and handled as little as possible—only when it is necessary to feed him, give him drinking water, change his diaper, and give an oil bath. These can be done when he is in bed. The baby's head should be raised for feeding. He should be turned from one side to the other as often as every 2 to 3 hours but should not be picked up and handled unnecessarily.

In caring for a premature baby there are three main problems which must be kept in mind constantly:

1. How can he be kept warm?
2. How can he be protected from infections?
3. How can he best be fed?

KEEPING THE PREMATURE BABY WARM

As the premature baby's body temperature is easily influenced by his surroundings, it is important to keep him warm and at a constant temperature. The temperature of the room must be maintained between 75° and 80° F. day and night. A thermometer should be hung on the wall over the baby's bed but not near a radiator or a window. Frequent readings of the thermometer should be made and recorded on a chart. Proper clothing must be used to prevent loss of heat (see p. 85), and the use of external heat also may be required. The proper maintenance of body temperature is most important in the first hours and days of life.

The temperature inside the crib should be between 80° and 90° F. A thermometer should be kept in the crib near the baby so that the temperature in the bed can be known at any time. The baby's body temperature should be taken by rectum every 4 to 8 hours and recorded on a chart. The body temperature should be kept between 98° and 99° F. If it goes as low as 97° or as high as 100°, this need not cause alarm. Overheating, however, may be as dangerous as chilling.

The amount of moisture in the air in relation to its temperature is important to the welfare of the premature baby. In cold weather the air in rooms heated artificially becomes dry. When the temperature of an artificially heated room is 75° or over it is well to increase the moisture in the air by boiling water in an open pan or teakettle or by putting some other type of vaporizer in the room. In hot weather the air may become too moist. To decrease moisture is difficult, but an electric fan running slowly will keep the air in motion and make the room more comfortable. It should be placed so that the air does not blow on the baby's bed.

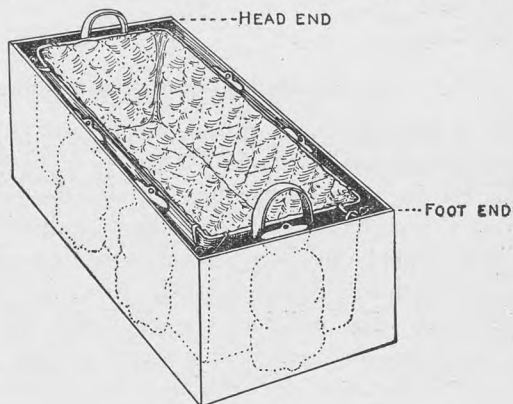
THE PREMATURE BABY'S ROOM

The premature baby's room should be small and should have a good source of heat, preferably hot-water radiators. A small room is easily heated and is easier to maintain at a constant temperature than a large room. One window, or preferably two, allows for sunlight and for ventilation by opening at the top. A narrow cloth screen (2 inches or more, according to the climate) may be used at the top of the window. (See p. 17 for construction of screens.)

HEATED BEDS

Some provision must be made for keeping the premature baby's bed warm. It is important to keep the temperature constant, at a point to be decided on from about 80° to 90° F., or even higher, depending on the size and vigor of the baby. In many hospitals special beds are used, which are heated electrically and regulated automatically. In the hospital or the home less expensive and simpler types of heated beds may be used with success.

The simplest type of warm bed for a small baby is a small clothes basket lined with cotton cloth or a thin blanket. This basket may then be placed inside of a bassinet or a box lined with quilting or a blanket (see illustration). Between the sides of the basket and the box, hot-water bottles of rubber or metal, heated bricks, or bags of heated sand should be put. In this way the source of heat will be kept in place and there will be no danger of its coming in contact with the infant. Bricks or bags of sand should not be made so hot that they cannot

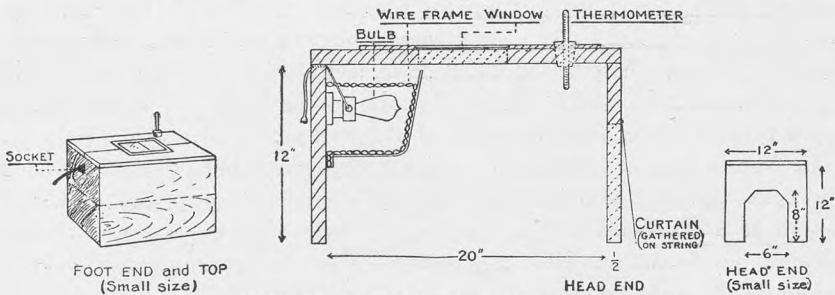
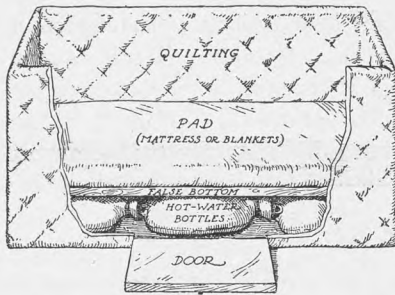


be handled with bare hands. If hot-water bottles are used they must be refilled frequently to keep the temperature inside the bed constantly between 80° and 90° F. It is best to refill one bag at a time, so as not to cool the bed. The bottles should be at 120° to 130° F. (Electric pads are not safe for this purpose.) A folded sheet or blanket should be put over the baby but not over his head.

Another type of warm bed can be arranged by using a small box, well padded inside and outside with quilting, into which is fitted a removable platform about 4 inches above the padded floor. A thin, flat hair pillow or several layers of wool blankets should be used as a mattress to cover the platform. Beneath the platform, on the floor of the box, two or three hot-water bottles may be placed. An opening should be cut in the side of the box below the platform so that the hot-water bottles can be removed for refilling without disturbing the baby. (See illustration.)

If, in an emergency, warm-water bottles must be placed beside the baby they should never be warmer than 115° F. and should be so arranged that they will not come in contact with the baby. The baby should be well wrapped in a blanket to keep the bottles from touching any part of him. A rolled bath towel placed between the baby and the warm-water bottles will give added protection.

If the house is wired for electricity, an electrically heated wooden box can be made at home and used as a cover or hood by inverting it over an ordinary



Electrically heated wooden box to be used on bed.

crib or bed. One end of the box should have an opening—about 6 by 8 inches—large enough to allow the baby's head to be outside the box. Hang or tack over this opening a washable cotton curtain, the end of which should be tucked in around the baby's neck to keep the warmth from escaping. (See illustration.) There should be an electric socket at the foot end of the box, into which a bulb covered with a wire guard is fitted. As a rule a 40-watt bulb will produce sufficient heat. The cord should be well insulated, especially at the point at which it passes into the bed. Cut a square opening in the top of the box and lay over this opening a piece of glass or mica, large enough to be pushed back and

forth so that the size of the opening can be altered. The heat can then be regulated by turning the bulb on or off and by opening or closing the top window.

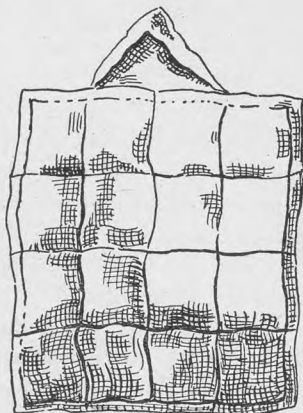
The temperature inside the box should be determined by means of a long thermometer, which is inserted through a cork placed in a hole in the top of the box and pushed down 2 to 3 inches into the box. Place the thermometer at about the middle of the box away from the electric bulb. Readings can be made from the outside if the section above the 70° mark remains above the cork. Since the baby's head is outside the box he will be breathing the air of the room. The room should be kept warm but it should be ventilated, when possible, by having the window open a little way at the top.

CLOTHING

The premature baby should be wrapped in a warm blanket immediately after birth. A sleeveless padded jacket may be prepared, and it may be best to continue the use of such a jacket for a week or two after the baby's birth. The jacket may be made of two squares of cheesecloth or of some very soft cotton material (18 inches square) with a thick layer of cotton batting stitched between and a piece of the padded material arranged as a hood. It should be long enough to cover the feet well and wide enough to lap over and be pinned in front. (See illustration.) It may be opened at the bottom for changing the baby's diaper. When the jacket is soiled, it may be burned and a new one substituted.

Small squares of absorbent cotton covered with soft gauze may be used as diapers. These pads can be easily changed when they become soiled.

The clothes that have been prepared for the baby are as a rule much too large if he is born prematurely, and substitutes should be prepared which can be put on and taken off with the least possible handling of the baby. Nightgowns of flannel or stockinet are all that the small baby will need for several weeks. They should open in the back and have tape ties. When a special warm bed is no longer necessary, the premature baby may be dressed as any newborn baby would be dressed. (See p. 20.)



BATHING

For very small and weak babies it is advisable not to give any bath for 2 or 3 days, unless it is necessary for the doctor or the nurse to use a warm bath to stimulate the baby because he does not breathe well. Later, when his breathing is well established and his temperature is normal, a partial oil bath may be given daily; only the buttocks, genitals, and folds of the skin are washed—without removing the baby from the heated bed and without exposing the rest of the body. The oil should be warm but not hot and only one part of the body should be exposed at a time to prevent chilling. Care should be taken to apply the oil

gently with cotton and not to rub the skin. The larger and more vigorous premature babies may be given complete oil baths daily after the first few days.

PROTECTING FROM INFECTION

Premature babies have very little resistance to disease. They are particularly subject to infections, especially colds. A cold is serious in a premature baby because it is very likely to develop into pneumonia, which may prove fatal. Every person who cares for a premature baby or comes in contact with him in any way must be careful to wash the hands before touching him lest some infection be carried to him. No one who has even a slight cold or other infectious illness should be allowed to take care of or go near a premature baby. Visitors, especially young children, should never be permitted in the room where a premature baby is kept. These rules cannot be kept too strictly. Colds, ear infections, and pneumonia are common causes of death in premature babies.

FEEDING

HUMAN MILK

The proper feeding of a premature baby is especially important. Until the mother's milk is established, every effort should be made to get at least a few ounces of milk daily from some other nursing mother or from a breast-milk agency. Any milk except that of the premature baby's own mother should be boiled for 1 to 2 minutes in an open saucepan or cooked in a double boiler for 10 minutes.

It is wise to delay putting a premature baby to the breast until his breathing and swallowing are well established; otherwise the effort of nursing may tire him or he may even be smothered. If the baby is too weak to nurse at the breast or to draw milk from the nipple of a bottle, the mother's milk should be expressed by hand or by means of some type of breast pump and fed to the baby slowly by means of a medicine dropper. (For hand expression, see p. 49.) If a medicine dropper is used, it is well to slip a short piece of soft rubber tubing over the end to prevent injury to the baby's mouth. The medicine dropper and rubber tip must be boiled each time before being used and carefully cleaned after use. Care must be taken not to give the milk faster than the baby is able to swallow it. Some babies are so weak that feeding must be given with a stomach tube (so-called catheter feeding); this should be done only by a trained person. A strong premature baby may be able to nurse or to take breast milk from a bottle.

As it may be some weeks before the baby is able to draw even small amounts of milk from the breast it may be necessary for the mother to empty her breasts at regular intervals by hand or by breast pump, not only to obtain milk for the baby during the early weeks of life but to keep up the milk flow until the baby is strong enough to nurse.

Expression of milk from the mother's breasts should be begun at the end of 12 hours; and the colostrum—and the milk when it comes—should be given to the baby.



Care should be taken that the baby is not overtired during feeding.

If breast milk cannot be obtained, artificial feeding will become necessary. (See p. 61.) The doctor will decide upon the milk mixture to be used.

NUMBER AND AMOUNT OF FEEDINGS

The time at which it is safe to begin to give water and milk to a premature baby depends upon his size and vigor. For feeble babies some authorities consider it well to withhold water for as long as 12 hours and then to give small amounts with a medicine dropper ($\frac{1}{2}$ to 1 teaspoonful) at 3- or 4-hour intervals. If the baby is vigorous he may be given water 6 to 8 hours after birth and then at 3- or 4-hour intervals. Milk feedings may usually be begun after the baby is 18 hours old.

The schedule on page 10 has been prepared for temporary use. The doctor will give a schedule suited to the baby's needs. The premature baby needs daily a total amount of fluid (milk and water) equal to about one-sixth to one-seventh of his body weight in pounds. For instance, if the baby weighs 3 pounds he will need daily one-sixth of 3 pounds, or three-sixths (one-half) of a pound of fluid. As 1 pound is equal to 16 ounces, one-half pound will be equal to 8 ounces. The 3-pound baby's full requirement of fluid during 24 hours therefore will be 8 ounces.

Such quantities, although needed, cannot always be given to the premature baby during the first days of life. The amount given daily will at first be small and the increase gradual. In fact, it is fortunate if the baby can take one-eighth of his body weight in total fluid (2 ounces for each pound of body weight) by the fourth day. If the baby is unable to take sufficient fluid by mouth the doctor may give additional fluid by injecting it under the skin (normal salt, Ringer's, or a comparable solution).

The quantity of milk given to very small babies in 24 hours for the first few days will be half an ounce to an ounce of milk for each pound of body weight. This will be divided into 7 to 12 feedings; each feeding will therefore be very small—1 to 3 teaspoonfuls of breast milk. The total amount of milk given in 24 hours may be increased daily by one-eighth to one-fourth ounce for each pound of body weight, until by the tenth day the total amount of milk taken in 24 hours usually will be 2 to 3 ounces per pound of body weight. The rapidity with which the amounts can be increased will vary with the size and development of the individual baby.

If it is not possible to get breast milk for the premature baby, some form of cow's milk may be used. Various milk mixtures have been used with success, but they must be ordered by the physician. If it is not possible to get the physician's advice at once, one of the following milk mixtures may be used temporarily, in the same amounts and at the same intervals as given in the schedule for breast feeding:

- | | | |
|--|--------|--|
| Evaporated milk, 3 ounces. | } or { | Half-skimmed cow's milk,* 8 ounces. |
| Water, 6 ounces. | | Water, 2 ounces. |
| Granulated sugar, 1 level tablespoonful. | | Granulated sugar, 1 level tablespoonful. |

* Half-skimmed cow's milk is obtained by removing half of the cream from the top of the bottle.

SUGGESTED FEEDING SCHEDULE FOR PREMATURE BABIES

*Baby weighing less than 3½ lbs.**Baby weighing 3½-4½ lbs.**Baby weighing 4½-5½ lbs.*

Breast milk		Boiled water		Breast milk		Boiled water		Breast milk		Boiled water	
Number of feedings	Amount	Number of times given	Amount	Number of feedings	Amount	Number of times given	Amount	Number of feedings	Amount	Number of times given	Amount
	<i>Teaspoon-fuls</i>		<i>Teaspoon-fuls</i>		<i>Teaspoon-fuls</i>		<i>Teaspoon-fuls</i>		<i>Teaspoon-fuls</i>		<i>Teaspoon-fuls</i>
1st 12 hours						2	$\frac{1}{2}$			3	1
13th hour			$\frac{1}{2}$				$\frac{1}{2}$				1
16th hour			$\frac{1}{2}$				$\frac{1}{2}$ -1				1
18th hour	$\frac{1}{2}$				$\frac{1}{2}$				1		
20th hour			$\frac{1}{2}$				$\frac{1}{2}$ -1				1-2
22d hour	$\frac{1}{2}$				$\frac{1}{2}$ -1				1-2		
2d day	8	$\frac{1}{2}$ -1	6	1	-1½	8	1	-2	8	2	-3
3d day	8	1	6	1½	-2	8	1½	-3	8	3	-4
4th day	8	1½	6	2	-2½	8	2½	-4	8	4	-6
5th-7th day	8	2	6	2½	-3	8	3	-5	8	5	-8
8th-10th day	8	3	6	2	-3	8	4	-6	8	6	-9
11th-14th day	8	3½	6	2	-3	8	5	-7	8	6	-9
					<i>Ounces</i>			<i>Ounces</i>			<i>Ounces</i>
15th-17th day	8	4	6	2	-3	8	1	-1¼	8	1½	-1¾
18th-21st day	8	4½	6	2	-3	8	1	-1½	or { 8	1½	-1¾
									{ 6	2	-2½

NOTE.—The schedule is arranged so that milk is given every 3 hours, at 3, 6, 9, and 12 o'clock. Water is given midway between feedings except at 1:30 a. m. and 4:30 a. m. It may be necessary to feed very small or weak infants every 2 hours. Increases in the feeding should be made gradually, not more than $\frac{1}{2}$ teaspoonful at a feeding. For infants weighing less than $2\frac{1}{2}$ pounds the increase should not be more than $\frac{1}{4}$ teaspoonful at a feeding. When the baby is taking $2\frac{1}{2}$ to $2\frac{3}{4}$ ounces of breast milk per pound he is receiving as much as is usually necessary for gain in weight. Further increase in feeding is made as the baby gains weight and therefore requires more food to supply $2\frac{1}{2}$ to $2\frac{3}{4}$ ounces per pound. After the baby has begun to gain satisfactorily and is taking his feedings well, the interval between feedings may be increased and more milk given at each feeding.

Sugar may be used in the form of granulated sugar or corn sirup or in any other form ordered by the doctor.

If a cow's milk mixture is used it must be thoroughly cooked for 20 minutes in a double boiler. The boiler should be covered to prevent evaporation. Evaporated milk has been cooked in canning so that it is necessary only to boil the water when making the mixture.

DRINKING WATER

During the period when the baby is receiving very small feedings of breast milk, special care must be taken to give him small quantities ($1/2$ to 2 teaspoonfuls) of tepid boiled water between feedings. He will need this to bring his total intake of fluid up to even the lowest requirement—2 ounces for each pound of body weight. As he takes more milk he may take less water, but it is well to offer water to him between feedings even when he is strong enough to take an adequate amount of fluid at his feedings.

WEIGHT OF BABY

Although occasionally premature babies will hold their birth weight, most of them will lose weight and should not be expected to regain their birth weight until the second week or—what is more likely—the end of the third week or even later. For very small premature babies an average daily gain of one-third to one-half ounce, with a doubling of birth weight in 75 to 100 days, may be considered satisfactory. The baby should be weighed daily if he is vigorous; otherwise he should be weighed every 2 to 3 days.

ADDITIONAL FOODS

Premature babies are very likely to develop rickets, and therefore it is important that some form of antirachitic treatment should be begun at the end of the first week of life. Premature babies usually require about twice as many units of vitamin D—1,000 to 1,500 units—as do babies born at term. For the premature baby it is best to give vitamin D in some concentrated form (tested), a few drops of which will contain the necessary number of units. Some form of fish-liver oil that has a high concentration of vitamin D or some other form of vitamin D may be used, but the doctor should be consulted about the form and the exact amount of vitamin D to be given.

If a concentrated form of vitamin D is not available and *if the infant is vigorous and swallows well* pure cod-liver oil may be given. Begin with one-fourth teaspoonful of cod-liver oil twice a day, and after 2 to 3 weeks increase this amount to one-half teaspoonful twice a day. When the baby is 6 weeks old this amount may be increased to 1 teaspoonful twice a day, and in the third month to $1\frac{1}{2}$ teaspoonfuls twice a day. At first the cod-liver oil may be given with a medicine dropper, the tip of which is covered by a short piece of rubber tubing; later a teaspoon may be used.

Orange juice—one-half teaspoonful in water once a day—should be begun when the baby is 2 weeks old. As rapidly as the baby is able to take more orange

juice the amount should be increased until he is taking the amount recommended for a full-term baby of his same age. As the premature baby grows older other foods should be added to his diet as they are to the diet of the full-term baby. (See p. 57.)

OUTDOOR LIFE

Since changes in temperature are to be avoided for the premature baby, he should not be taken outdoors while very small. The age at which he may be put outdoors varies with the size and degree of prematurity of the baby and with the weather and season of the year. After he has attained the size and vigor of a 2-month-old baby, he may be put outdoors in the same way that a full-term baby of this size would be.

Sun baths cannot be given to small premature babies. When the baby grows larger and more vigorous sun baths can be given just as they are given to full-term babies. (See p. 34.) Because the sun baths cannot be given early in life, special effort must be made to give some form of tested vitamin D. Sun baths with artificial sun lamps may also be ordered by the doctor.

The Sick Baby

WHAT A MOTHER SHOULD NOTE

WHEN the baby is well the mother should observe the usual position of his body, his usual activity, the usual amount of sleep, the expressions of his face, and the color and condition of his skin, so that signs of discomfort, pain, irritability, or unusual drowsiness can be noticed quickly. The character and number of bowel movements and the amount and color of the urine should also be watched.

The mother should learn to read a clinical thermometer. She can purchase a rectal thermometer (one with a thick bulb) at any drug store, and the doctor or the druggist will be glad to show her how to read it. It is best not to make a practice of taking the temperature unless the baby seems to be ill.

Before using the thermometer shake it down until the mercury is below 97° F., and smear the bulb with petroleum jelly or oil. To take the baby's temperature place him face downward on your lap separate the buttocks with one hand and with the other put the bulb end of the thermometer about one inch into the rectum (the lower part of the bowel). Hold it there for 5 minutes. Keep the baby quiet and hold his legs firmly so that the thermometer will not be broken. Do not leave the baby nor even let go of the thermometer while it is in the rectum.

A baby's temperature normally ranges from 98.6° to 99.6° F. If it is higher than 100° F. the doctor should be notified. A baby is more likely to have fever when he is ill than an adult, and when he has fever it is likely to be higher than with an adult. A rise in temperature frequently accompanies even a slight upset. A daily rise of temperature, even if slight, lasting for a long period, is often just as important a symptom as a higher temperature for a short period, or even more important. A baby who is sick may have fever at any time of the day or night, but it is likely to be higher in the evening than in the morning.

EARLY SIGNS OF ILLNESS IN A BABY

If a baby develops any of the following signs he should be put to bed, his temperature taken, and the doctor called:

1. *Fever.* If the baby's face is flushed or his skin is hot to the touch—the whole body, not merely the hands or feet—he may have fever and his temperature should be taken.

2. *Irritability or drowsiness.* If a baby shows unusual restlessness, is irritable and cries considerably, or if he is unusually drowsy and wants to be let alone, he may be ill.

3. *Vomiting.* Any sudden or unusual vomiting should be considered a sign of illness. It may be the first sign of a contagious disease or of a digestive upset. It should not be confused with mere spitting up of food. (See p. 53 for spitting up.)

4. *Diarrhea.* A sudden increase in the number of stools, especially if they are loose and watery, is a sign of illness. Such diarrhea may mark the beginning of a digestive disturbance or of an acute infection. Pus, blood, or an unusually large amount of mucus in the stools is a sign of disease of the intestines (bowels).

5. *Refusal of food.* Sudden refusal of the accustomed food may be the first sign of illness. This is not the same as refusal to eat a particular food because of unfamiliarity with it. Pain or swelling in the throat may be a cause. Food should never be forced, whether the baby refuses it through illness or for any other reason, even temper. (See p. 40 for method of dealing with refusal to eat.)

6. *Pain.* If a baby cries and is restless and pulls his legs up over his abdomen he may have pain in the abdomen. If he holds his legs or arms very still, he may have pain in them. The legs may be held in one position, and when the mother touches them the baby may cry. Pain in the ear may be shown by constant turning of the head or by pulling at the ear. Very often the mother cannot tell just where the pain is, as the baby shows it only by sharp crying and general irritability.

7. *Cold in head with fever.* A running nose or redness or discharge from the eyes, coughing, or unusually rapid breathing is a sign of illness. It may be the beginning of a cold or of a contagious disease such as measles, or of some other severe infection.

8. *Hoarseness or croupy cough.* If a baby's voice becomes in the least hoarse, the doctor should be called at once, as this may be an early sign of diphtheria.

9. *Rash with fever.* Any rash or breaking out on the baby's skin should be considered a sign of illness, and his temperature should be taken.

10. *Convulsions.* Spasms, spells, or twitching of face or arms or legs may be a very early sign of some serious disease in a baby. *Call the doctor immediately.*

WHAT TO DO BEFORE THE DOCTOR COMES

Follow these rules while waiting for the doctor to come:

1. Keep the baby quiet and leave him in his bed in a cool room away from the other children.
2. If there is vomiting or diarrhea, stop all food.
3. Give small amounts of boiled water frequently, at least every hour, unless the baby vomits persistently; in that case do not give even water for 2 hours. If the doctor has not arrived by the end of that time, begin giving small amounts of water (1 to 2 teaspoonfuls) every half hour. If the vomiting has stopped, increase this amount gradually and lengthen the interval until he is taking 2 to 3 ounces or more every hour.
4. Keep a record on paper of the baby's temperature, the number and kind of his stools, and the number of vomiting spells.
5. Save the baby's stools for the doctor to see.
6. If the baby has pain in the abdomen or if it is distended (puffed out) and the doctor is long in coming, give a small enema of warm water (see p. 93). *Never* give a cathartic.

CARING FOR A SICK BABY

A sick baby should be kept in bed in a cool (60° to 65° F.), quiet, well-ventilated room and should be allowed to sleep or rest undisturbed as much as possible. The sickroom should not be a gathering place for the family or the neighbors. Even if no contagious disease is suspected, a sick baby should be kept away from other children.

The doctor's orders should be carried out carefully and exactly.

The following are general directions for nursing care, which should be observed unless the doctor orders otherwise.

BED CARE

A baby should be kept in bed as long as he has a rectal temperature higher than 99.6° F. If his illness has been at all severe, he should stay in bed from 3 days to 1 week after his temperature has remained normal (98.6° to 99.6° F.) for 24 hours. The after effects of many diseases may be largely prevented by this precaution.

The baby's position in bed should be changed occasionally not only to rest him but also to prevent congestion in any part of his body and to prevent soreness of the skin.

BATHS

A sponge bath should be given daily instead of the usual tub bath. If the baby has a high fever (over 104° F.), a sponge bath with water at about 90° F. may be given once or twice a day or oftener. Every precaution should be taken in bathing a sick baby not to chill him. If his hands and feet are cold, well-wrapped warm-water bottles may be used.

ELIMINATION

If a sick baby is not taking much food his bowels may not move as frequently as usual. If there has been no movement for 48 hours or if the abdomen is distended, an injection or enema of warm water may be given. If the baby urinates less frequently than usual more water should be given him to drink unless he is vomiting everything taken by mouth.

How to give an enema, or injection.

For an enema, or injection, buy a bulb syringe holding 1 to 3 ounces. Prepare warm, soapy water, using mild unmedicated soap. To fill the syringe, squeeze the bulb while holding the tip under water; then release it and it will fill with water by suction. Let the baby lie on his back across your lap or on a table with the buttocks somewhat raised by a folded towel under his hips. (This position will cause the water to run up into the bowel more readily and the towel will catch any drip.) Grease the tip of the syringe with petroleum jelly. Lift the baby's legs with the left hand and with the right introduce the tip into the rectum for about an inch, and slowly squeeze 2 or 3 ounces of the water from the bulb. If gently and slowly done, this causes the baby little or no discomfort. If he is badly constipated the starting of the bowel movement may be somewhat painful.

When the liquid has been injected, remove the syringe and hold the buttocks together for a few minutes to keep the water in before placing over the chamber. The water sometimes comes out as the syringe is withdrawn and therefore the mother's clothing should be well protected. If the first injection does not bring about a bowel movement, give one more.

A soap stick or other suppository may be used instead of an enema. Neither enemas nor suppositories should be used over long periods of time, as they may cause irritation of the rectum.

FOOD

If the baby has fever the strength of the milk mixture should be reduced, and all solid foods cut out of the diet until the nature of the illness is known. If a bottle-fed baby vomits or has diarrhea all food should be stopped and small amounts of boiled water given every hour. The doctor should be consulted, if possible, before the feedings are given again. If a doctor cannot be seen soon and the vomiting or diarrhea stops, small feedings may be begun. If a breast-fed baby vomits or has diarrhea, one or two feedings should be omitted and a small amount of water given every hour. As soon as the vomiting or diarrhea stops the breast feedings may be started again at the regular hour. For a few feedings it may be wise to allow the baby to nurse only 5 minutes. (See section on Diarrhea, p. 94.) Illness accompanied by fever often lessens the baby's ability to digest food. He may not want to take as much as usual and should not be urged to do so. Unless the illness is a long one it is better for him to take only as much food as he wants.

In illness involving no digestive disturbance the baby should have the regular milk mixture, and he may have solid foods, such as cereal, vegetable, egg, and the pulp of stewed fruits, if he is already used to them, unless the doctor orders a special diet.

WATER

Drinking water is of the greatest importance in illness. Unless there is continuous vomiting boiled water should be offered at very frequent intervals while the baby is awake, possibly every hour, and the amount taken in 24 hours should be written down. If there is no digestive disturbance, orange juice may be added to the water if the baby will take more this way.

COMMON DISORDERS

VOMITING

Vomiting should be distinguished from spitting up or spilling over, which has been discussed on page 53. Vomiting is the sudden throwing up of the previous feeding or a large part of it, or of water, and may occur immediately after a feeding or even several hours later. It may be a symptom of digestive disturbance or an early symptom of an infectious disease. When a baby that has been previously well vomits, it is best to stop the food, giving only boiled water until the cause is determined. In all cases of repeated vomiting or sudden vomiting with fever a physician should be consulted.

Repeated explosive or "projectile" vomiting in a very young baby may mean that there is an obstruction in the stomach. Such an obstruction may require an operation.

The loss of body fluids from persistent vomiting, especially when accompanied by diarrhea, may rapidly reduce the baby to a critical condition. Extreme restlessness or drowsiness in a vomiting baby is a sign of a serious condition. There should be no delay in seeking a doctor's advice in any case of repeated vomiting.

DIARRHEA

Diarrhea is the passage of too frequent or too loose stools. Serious attacks of diarrhea may occur in any season, but they are especially common in warm weather. They may accompany fever due to any infection. Severe diarrhea may result in acidosis.

Whenever a baby has watery stools, or mucus and blood in his stools, or if an artificially-fed baby has even a slight diarrhea all food should be stopped. The doctor should be called at once, for the diarrhea may be caused by an acute infection or some other condition that should be treated promptly. He will regulate the feeding.

Diarrhea should always be considered serious and should therefore be treated by a doctor. If none is available allow the baby no milk for 24 hours and return to normal feeding very gradually. At first give diluted skimmed milk that has been boiled for 5 minutes. The mixture should be started at half the previous strength, and the feeding at first should be smaller than usual. The strength and amount of the feeding should be increased gradually.

Constipation should not be considered a disorder. (For habit training and regulation of the bowels see p. 41.)

SCURVY

Scurvy is a disease which results from an insufficient amount of vitamin C in the food. It is prevented or cured by giving foods which contain this vitamin. Breast-fed babies whose mothers have a good diet rarely get scurvy; it is found chiefly in babies who have been fed artificially for long periods and who have had insufficient amounts of foods which contain vitamin C in their diet. Of the foods which prevent scurvy the most convenient are orange juice and tomato juice. Lemon juice and grapefruit juice are as effective but are more difficult to give. Pineapple juice, raw apples, bananas, and some other fruits contain vitamin C but in smaller amounts. Canned fruit juices, if prepared by a reliable firm, may be used to supply vitamin C. Prune juice does not contain this vitamin in satisfactory amounts. Vitamin C is also found in many vegetables.

The chief symptom of scurvy is a tendency to bleed. Because the bleeding most frequently occurs around the bones the first thing that is noticed is usually soreness of the legs or arms; the baby cries when he is picked up or the diaper is changed; he does not like to be handled. In more severe cases there is failure to gain, there may be bleeding from the skin, and if the baby has teeth the gums around them may bleed. Improvement is rapid when sufficient vitamin C is given.

RICKETS

Rickets is a common nutritional disease occurring during the period of most rapid growth in infancy and early childhood. It affects the whole body but most strikingly the bones, which may become greatly deformed, and the muscles, which become weak and flabby. Rickets usually starts in the first months of life, when the baby is growing most rapidly, but may not be recognized until later, when the weakness of the muscles and the deformities of the bones (such as bowlegs) become pronounced.

The baby with rickets may be restless, irritable, and pale. He may be slow in teething and in learning to walk. His weight may be normal.

If a child's chest bones are greatly deformed by severe rickets, the deformity may prevent his lungs from expanding properly. A child who has rickets is often not able to throw off infections as a normal child does. Thus, although rickets does not cause death it may have complications that do. A severe complication of rickets is a serious disease called tetany, sometimes resulting in convulsions.

Artificially-fed babies are more likely to develop rickets than breast-fed babies, but breast feeding does not prevent it.

A rapidly growing baby is more likely to develop rickets than a baby who is growing more slowly. A premature baby is especially likely to develop rickets, as he grows faster during his early months than a full-term, normal baby.

The disease is caused by lack of a certain factor, called the antirachitic factor or vitamin D, provided by cod-liver oil and some other substances and by certain rays of the sun, the ultraviolet rays. It occurs chiefly in climates where the sun's rays are not very strong except in the spring and summer; namely, the Temperate Zones.

Rickets may be prevented or cured by giving cod-liver oil or other substances containing vitamin D or by giving sufficient direct sunlight, or still better, both.

CONVULSIONS

Convulsions in babies are frequently associated with serious diseases, such as pneumonia, meningitis, and tetany, and may vary in length from a few seconds to an hour or two. A doctor should be called at once even though the convulsion has ceased. After a seizure of this kind a baby should stay quietly in bed for several days. He should be given nothing but water for the first 24 hours and for several days the amount of food given should be considerably less than usual.

It is important that the cause of the convulsions be determined. Sometimes the cause is hard to find, but it is unwise to attribute convulsions in an otherwise apparently normal child to "teething."

HEAT RASH OR PRICKLY HEAT

Heat rash may appear either in summer or in winter; it is usually caused by excessive perspiration due to too warm clothing. A rash of fine red spots usually comes out first on the neck or the chest. The parts affected should be sponged frequently, or dabbed with bicarbonate of soda and water (1 teaspoonful of soda to a pint of water), or powdered with starch. Using lighter clothing for the baby usually relieves the condition, but it may be necessary for a while to put soft muslin or linen next to the skin.

CHAFING

Chafing is a redness or irritation of the skin appearing in the folds of the skin or on parts of the skin that are rubbed by the clothing. It is frequently found in fat babies. Chafing may occur on the buttocks if wet diapers are not removed soon enough, if the skin is not carefully cleaned and dried after a bowel movement, or if the soap has not been carefully rinsed out of the diapers. (For care of diapers see p. 22.) Rubber pants may cause irritation of the skin by preventing evaporation. Cleanliness is of the first importance in preventing this condition. Little or no soap should be used in bathing the chafed parts. Bran instead of soap may be put into the water for bathing, or oil may be used for cleaning the irritated skin instead of water. The buttocks and thighs should be wiped off with mineral oil each time the diaper is changed. Talcum powder or dry starch powder should be used sparingly, if at all, because powder cakes in the creases.

ECZEMA

A variety of skin disorders common in infancy are grouped under the general name of eczema. It is a roughness of the skin usually accompanied by itching which appears most often on the face but also on other parts of the body. Certain babies show a tendency to eczema from birth. It may occur in either breast-fed or artificially-fed babies. The cure is frequently a long, slow process. All infants with eczema should be under the care of a doctor, who will regulate the diet and direct the local treatment. Eczema may come and go, but it is always increased by dirt and scratching.

In general, it is well to use oil instead of water in bathing a baby that has eczema. Scratching and rubbing must be prevented, and usually some restraint of the hands is necessary for this. To keep the hands from reaching the face, cuffs or tubes, made of cardboard or other stiff material that prevent the elbows from bending, may be fastened to the baby's sleeves. (See illustration, p. 43.)

SCABIES (THE ITCH)

Scabies, commonly called "the itch," is an infection of the skin caused by a mite that burrows under the skin. This results in a fine red eruption, and severe itching.

Scabies is always contracted from some person who has the infection. It is easily spread and if any person in the family has it prompt treatment is necessary to prevent others from getting it. The doctor should be consulted for advice regarding treatment. Boiling or baking of all bedclothes and clothing should be done daily until all signs of the infection have disappeared.

IMPETIGO

Impetigo is another skin infection which is usually very contagious. It begins with one or more papules (pimples) topped by small blisters that contain clear or yellowish fluid. In a few days these dry and form a crust. If not treated, the condition may spread over the body and last for several

weeks, but with proper treatment it usually clears up in a few days. A doctor should be consulted. Great care should be taken to keep the baby away from any child who has this disease.

The infant's nails should be kept cut short and scrubbed with a nail brush and soap and water. Great care should be taken to prevent scratching. Scratching of the skin infected with scabies may cause impetigo in addition and the two conditions are very difficult to treat when combined.

THRUSH

Thrush is a disease of the mucous membrane caused by putting dirty objects into the mouth. When a baby has thrush small white spots are found on the inside of the cheeks and, less frequently, on the lips, gums, and tongue. Great care should be taken not to hurt the mucous membrane, for if it is irritated the condition will become worse. If the condition is severe, feedings may be given by a spoon or cup until the disease has disappeared. Give the baby 4 or 5 teaspoonfuls of water to drink after each feeding to rinse his mouth, but never swab nor wipe out the mouth except under the direction of a doctor.

To prevent thrush, sterilize (boil) everything that is likely to be put into the baby's mouth. Never allow a baby to put an unboiled rubber nipple into his mouth. Never give him a pacifier. Do *not* wipe the inside of his mouth with a cloth or gauze.

WORMS

Pinworms are practically the only worms common in infancy. When they are present, examination of a stool recently passed will reveal tiny threadlike worms less than half an inch in length. These worms come out of the rectum and lay their eggs on the skin in this region.

Worm medicines must not be given except on the advice of the doctor. A medicine powerful enough to kill worms may harm a baby unless it is given with great care under a doctor's orders.

COLDS

Babies frequently have colds in the head because they are thoughtlessly permitted to be near someone with a cold. Colds are contagious, and the baby should be kept away from a child or an adult who has one. What is "only a cold" in an adult may be serious illness for a baby and develop into bronchitis or pneumonia. The infection may involve the throat and cause tonsillitis. Earache and "running ear" are commonly caused by colds. If a baby has colds often, the adenoids may be enlarged or infected.

Colds in the head cause difficulty in breathing and nursing. The baby's nose should be wiped gently with a soft cloth or tissue. The doctor may order some drops to be put in the nose with a medicine dropper which will shrink the lining of the nose so that breathing will be easier. Do *not* put mineral oil in the baby's nose.

Rest in bed is an essential part of the treatment of any bad cold. The baby should be put to bed and the temperature of the room kept even day and night at 65° to 70° F., while he has the cold.

Many contagious diseases besides colds begin with sore throat or a running nose, and any baby with either of these symptoms should be put in a room by himself away from other children.

If a baby has "snuffles" at birth or within the first few weeks after birth a blood test should be made by a doctor to determine whether the condition is due to syphilis.

ENLARGED OR DISEASED ADENOIDS

If a baby's sleep is disturbed considerably, if he sleeps with his mouth open, snores and is unable to nurse for any length of time without having to stop to get air through the mouth, or if he has frequent colds in the head, ear infections, or discharges from the nose, the mother may suspect that he has enlarged or diseased adenoids. A doctor should be consulted if the air passages are obstructed from any cause.

EARACHE

If the baby screams and puts his hands to the side of his head and rolls his head from side to side or pulls at his ear, he may have earache. Warm compresses or a well-wrapped hot-water bag may relieve the pain. If a doctor's advice cannot be obtained soon, a few drops of warm (not hot) mineral oil may be put into the ear. Nothing else should be put into the ear except by a doctor's order.

CROUP

There are two kinds of croup, the simple spasmodic type and the severe type which is really laryngitis. Both kinds must be taken seriously, for it is often impossible at the beginning to tell them apart. Simple spasmodic croup is not dangerous, but the other type is very dangerous and requires a doctor's immediate care. Whenever a baby's cry or voice becomes hoarse or weak and husky, a doctor should be called at once, so that he may treat him and give diphtheria antitoxin, if he thinks that the laryngitis may be due to diphtheria.

Simple spasmodic croup.

An attack of simple spasmodic croup usually comes on suddenly between bedtime and midnight, when a baby who went to bed apparently well wakes up with harsh noisy breathing or a dry, barking cough and some difficulty in breathing. The cry and voice are usually strong but hoarse. The baby may be frightened, and his fright increases the symptoms. The symptoms of croup frequently recur for 2 or 3 nights, and a baby who has one attack of croup is likely to have others.

Before the doctor comes the baby should be placed in an atmosphere filled with water vapor. This may be done by placing him in a small warm room in which water is boiling or a bathroom with hot water running. The doctor will advise with regard to treatment.

The day after the attack the baby should be kept quiet in a warm room at even temperature, if necessary in bed. For 2 or 3 days after an attack the child should not breathe very cold air; even the air in his sleeping room should be kept warm and moist.

Laryngitis.

If a baby who has had an attack of croup in the night is still hoarse the next morning, he probably has laryngitis—a serious condition due to diphtheria or to other infections. It often accompanies or follows a sore throat. A baby with this serious form of croup usually has hoarseness, loss of voice, and noisy, labored breathing, and seems increasingly sick. He often becomes worse during the night. Exhaustion and weakness are signs of great seriousness. He should be seen by a doctor at once. Every hour's delay in treatment may involve a risk to his life.

If the baby has been given diphtheria toxoid and 6 months later the Schick test is negative (see p. 13), he will probably have been protected from diphtheria.

ASTHMA

Asthma occurs in very few babies under 1 year. It is caused by sensitivity to some food, such as cow's milk or egg, or by material inhaled, such as powder, dust, or pollen. If a baby has asthma, the doctor will advise as to treatment and will make special tests to determine the cause if possible.

ACCIDENTS

SWALLOWING FOREIGN BODIES

If such objects as coins and pins are swallowed they usually pass through the intestines without causing any damage, but occasionally damage may occur, so that a child who has swallowed any article should be watched carefully. If no symptoms develop no treatment is necessary. The stools should be examined for the swallowed article. No medicine should be given nor should any change be made in the diet except as ordered by the doctor. If the object swallowed is sharp or pointed, the doctor should be called immediately.

If a baby gets a small object in his windpipe he will cough or choke. A doctor should be called at once or the baby should be taken to a hospital.

SWALLOWING PILLS OR POISONS

If a baby accidentally swallows a pill or anything else that might possibly poison him, a doctor should be called at once or the child taken at once to a hospital. While waiting for the doctor try to make the baby vomit by tickling the back of his throat; giving him plain warm water may make him vomit, or warm water with common salt or mustard dissolved in it—a teaspoonful of the salt or mustard to a glass of water. Give him as much as he will drink.

BURNS

The treatment of burns varies with their severity. A mild burn that causes only redness of the skin or small blisters may be treated first by applying a paste of bicarbonate of soda and water. Later oil may be applied for a day or two. After this a clean dry bandage without oil is best. Do not break the blisters as they may become infected.

For burns that are severe enough to cause much blistering or that affect much skin surface a doctor should be consulted. For home treatment before the doctor sees the child pour a solution of freshly prepared tea, very strong, which has been cooled to body temperature, over the burned area, or apply a paste of baking soda and water. If the part can be kept clean and the baby's hands can be kept away from it, it is better to use no bandages. Otherwise clean lightweight sterile bandages or freshly ironed linen should be used. Never use absorbent cotton on a burn.

For deep burns that affect large skin surfaces the baby should be taken to a hospital immediately. A solution of tea may be applied if delay in reaching the physician or hospital is unavoidable. *Do not use oily substances on deep burns.*

It is important to keep the surfaces that have been burned absolutely clean to avoid infection. After a severe burn has begun to heal the child should be kept under the doctor's care in order that he may see that everything possible is done to prevent the scars from causing deformities.

CUTS AND WOUNDS

A break in the skin should be cleaned thoroughly with boiled water, mild soap, and a piece of freshly boiled cloth. It may be painted with fresh tincture of iodine and washed off with alcohol and a sterile bandage applied. All severe cuts, deep puncture wounds, and wounds into which dirt has entered should be treated by a doctor.

COMMUNICABLE DISEASES

Communicable diseases occurring in babies under 1 year of age should be regarded as serious. (For prevention, see p. 12.) The younger the baby the more serious the disease. Those which occur commonly in babies under 1 year of age are whooping cough, measles (in babies over 6 months), pneumonia, dysentery, and tuberculosis. Others occurring less commonly are diphtheria, infantile paralysis, cerebrospinal meningitis, and rarely, scarlet fever, smallpox, mumps, typhoid fever, and malaria. Chickenpox occurs in infants but is usually not serious.

These diseases spread largely through direct contact with the excretions or secretions of a patient who has the disease or through foods such as raw milk, fruit, or vegetables contaminated by an infected person or by flies or mosquitoes which carry the germs from an infected person.

A baby with any communicable disease should be under the care of a physician.

WHOOPING COUGH AND MEASLES

Whooping cough and measles are more serious diseases in infancy than in later childhood, on account of the fact that they are more frequently complicated with broncho-pneumonia in infancy. Great effort should be made to prevent them (see p. 13). A baby with measles should be kept in bed at least 10 days; a baby with whooping cough needs bed care only if he has fever. A baby with whooping cough should be outdoors as much as possible in suitable weather and under quarantine regulations.

PNEUMONIA

Pneumonia is a disease for which especially careful nursing is necessary. Bed care and medical treatment are essential throughout the disease. If proper care cannot be given at home it is advisable to send the baby to a hospital.

DYSENTERY

Dysentery is a disease of the bowels which occurs generally in hot weather and hot climates. It usually results from contact with someone who has the disease or from infected milk or other food. It often is spread by flies. It causes fever, severe diarrhea which is often bloody, and loss of weight. A doctor should be called if a baby has diarrhea. He will decide whether or not it is due to dysentery and will direct the treatment accordingly.

TUBERCULOSIS

Tuberculosis also is contracted in infancy by contact with someone who has the disease or through milk. A baby who persistently does not gain in spite of good care or who has an unexplained daily rise in temperature should be taken to a doctor and tested for tuberculosis. He should be kept under the close supervision of the doctor.

DIPHTHERIA

Diphtheria occurs less commonly in infancy than after 1 year of age. If it is suspected that a baby has diphtheria, because of a bloody discharge from the nose or because the baby's voice or cry is hoarse, or because grayish-yellow patches are seen in the throat, a doctor should be called at once, for antitoxin must be given early if the baby is to be cured. (For prevention, see p. 13.) In infants and young children diphtheria of the throat often looks like simple tonsillitis, and cultures should always be taken if a baby has patches in the throat.

GONOCOCCUS INFECTION

Two forms of gonococcus infection occur in infancy—ophthalmia neonatorum (infection of newborn babies' eyes) and vaginitis (white or yellowish white discharge from the genital tract).

Ophthalmia neonatorum may cause permanent blindness, if not treated promptly. It may usually be prevented by putting 2 drops of 1-percent silver-nitrate solution into each of the baby's eyes immediately after birth. If there is redness or discharge from the baby's eyes within the first 2 or 3 weeks after birth, the doctor should be called at once so that intensive treatment can be given if he finds that it is a gonococcus infection.

Girl babies not infrequently have a white discharge from the vagina at birth, which soon disappears. A discharge which persists or is yellowish is caused in some cases by gonorrhoea, contracted usually from the mother at birth or from some member of the household who has the disease. The germ may be carried on the hands, or on washcloths, towels, or diapers. Microscopic examination should be made of any vaginal discharge to determine whether it is gonococcus infection. Prompt local treatment under the direction of a doctor is necessary to cure this form of gonorrhoea, which is often most persistent. A baby who has it should wear a pad to catch the discharge, and the pads should be burned.

Unless the utmost precautions are taken gonococcus infection will spread to other infants, especially girls, who may come in contact with the baby or the person caring for the baby. A child with this disease even under treatment should be considered a possible source of infection as long as there is a discharge, and every care should be taken to prevent the spread of the disease.

The mother or nurse caring for a baby with gonococcus infection should scrub her hands thoroughly with hot water and soap every time she has handled the baby. Every article of soiled clothing and bedding used by the baby should be boiled half an hour. The entire bath equipment should be strictly separated from that used by any other person.

SYPHILIS

Congenital syphilis, which is syphilis acquired by the baby from the mother before birth, unfortunately is a fairly common disease. It is preventable. (See p. 14.)

Many babies who have congenital syphilis either die before birth (that is, are stillborn) or die within the first few weeks after birth; and those that survive may have lasting effects from the disease which handicap them, sometimes throughout life.

The disease can be prevented in the baby if the mother has adequate prenatal treatment. If the mother is known to have syphilis, whether she has been treated for it or not, the baby's blood should be tested for syphilis (usually by the Wassermann or Kahn test) when the baby is about 2 or 3 months old, even if he has remained healthy. If the test is positive at this time he should be treated for syphilis even though he is still apparently well; if the test is negative, it should be repeated every 6 months for at least 2 years.

If a baby is born with snuffles, a skin eruption, or peeling of the palms and soles or if he develops them shortly after birth, a doctor should be consulted and a blood test made. No baby is too young to be treated for syphilis. Treatment should be started as soon as the disease is known to be present and should be continued for a long time—until repeated tests show the baby's blood to be normal.

Traveling With the Baby

In traveling with a baby the most important thing to remember is the necessity for boiling all milk mixture, drinking water, bottles, stoppers, nipples, measuring glass, and funnel. Remember that even if the baby is breast fed, provision must be made for boiling his drinking water as well as the bottles and nipples used for drinking water.

For a trip no longer than 24 hours the boiling of milk mixture, drinking water, bottles, and nipples may be done at home, and vacuum bottles used to carry the cold milk mixture and drinking water. If refrigeration is available, as in the buffet car of a train, the nursing bottles may be prepared in advance. These bottles after boiling should be stoppered with rubber corks or covered either with rubber caps that have been boiled or with wax paper held with rubber bands. The bottles should then be wrapped in a clean cloth. The nipples after boiling should be wrapped in sterile gauze or put into a glass jar with screw-on top (both the jar and the top must be boiled). When preparing for the day's trip, boil a day's supply of milk mixture as usual and chill it thoroughly before putting it into the vacuum bottle. Milk mixture for a baby must not be put into a vacuum bottle while it is warm, as it may sour. The vacuum bottle must be cleaned, scalded, and cooled before the cold milk mixture is put into it. Milk from a vacuum bottle should not be used after 24 hours.

At each feeding time fill one of the nursing bottles from the vacuum bottle and warm it. If there is no other way of obtaining hot water to warm the bottle, a solid-alcohol stove can be used to heat water in a small saucepan. It should be placed on a metal tray before being lighted.

For a longer trip it is usually convenient to take a supply of canned milk, either dried or evaporated. It will be necessary to boil the bottles and nipples once a day. Arrangements for the boiling can usually be made on a train, a boat, at a hotel, or at a tourist camp. It may be possible to boil a whole day's supply of the milk mixture as you would at home and keep it in an ice box. If this cannot be done, each feeding will have to be prepared separately. If evaporated milk is used, it can be prepared by adding boiling water. If dried milk is used, each feeding can be made up separately. The mixture of dried milk and water must be boiled before being used.

The following supplies for a journey longer than 24 hours may be packed in a small suitcase:

Small cans of evaporated or dried milk.	Vacuum bottle for a day's supply of boiled water.
Jar of sugar.	Tablespoon and teaspoon.
Small egg beater for mixing dried milk.	Cup.
Strainer for dried-milk mixture.	Solid-alcohol stove.
Funnel.	Metal tray for stove.
Enough nursing bottles and stoppers for a day's feedings and for drinking water.	Pint-size utensil, for heating food.
A day's supply of nipples in covered glass jar.	Cans of mashed vegetable.
	Oranges or canned tomato juice.

Be sure to take the doctor's written directions for the feeding.

Be sure to obtain accurate information as to the leaving and arriving times of all trains and boats to be used in the journey. When a night trip is to be taken berths should be reserved in advance. If possible a stateroom should be engaged, even if something else has to be given up. The privacy and quiet will make the journey easier for the baby.

A market basket is more comfortable for the little baby than his mother's arms and more convenient for the mother. The basket should be deep, so that the baby will not roll out. It should be placed carefully so that it will not fall. Arrange the basket like a bed, with a thin pillow for a mattress and a piece of rubber sheeting. A cotton mosquito netting should be brought along to cover the basket. A young baby can stay in the basket during much of the journey.

For a journey in hot weather the baby should be dressed lightly. A diaper and a thin dress are enough. A wash-silk or thin cotton-seersucker dress is easy to wash when soiled. A sweater or a coat and a blanket should be at hand in case the day suddenly cools. A bag lined with rubber should be used for diapers. Disposable inner pads may be useful.

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