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Dr. Kellogg's Lectures  
on  
Practical Health Topics



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How to Save the Babies



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## Contents

Scientific Information for Mothers About the Rearing of Children .....	13
Food and Feeding of Infants .....	33
General Care of the Child .....	57
Hygiene for Nursing Mothers .....	75
Common Diseases of Infancy .....	83
Feeding During Second Year .....	99



**Scientific Information for Mothers  
About the Rearing of Children**



# HOW TO SAVE THE BABIES

## Scientific Information for Mothers About the Rearing of Children

THE most important crop which any country produces is the baby crop. This fact is evident; yet it cannot be denied that far less attention is given to the study of the care and rearing of infants than to the raising and improvement of domestic animals. Many a woman knows well how to raise prize turkeys or how to feed a pet poodle, while grossly ignorant of the conditions essential for the growth and development of vigorous children.

Within recent years much more attention than formerly has been given to the study of the hygiene of infancy, and with the result that infant mortality has been very greatly reduced, and yet not fewer than 300,000 infants die annually in the United States alone. A large portion of these lives would be saved if mothers were as intelligent as they should



be respecting infant feeding and the general care of young infants. The purpose of this booklet is to give in simple form a brief summary of the important facts that have been developed by the scientific study of child hygiene by experts in all civilized countries during the last twenty years.

We will first consider the development of the child, natural and artificial infant feeding, the general care of the child, bathing, clothing, etc., and finally the best methods of dealing with some of the most common of the maladies of infancy.

### **Development**

The proportions of a new-born infant are very different from those of an adult. The head in particular is greatly out of proportion in size to the rest of the body. The lower half of the body, that is, all parts below the umbilicus, are less well developed than those above this point; the legs of a young infant are smaller in proportion to its size than are the arms.

The fontanel closes at 14 months to 24 months: average about 18 months.

The child should be able to support its head the third or fourth month.

Infants laugh the third to the fifth month.

An infant reaches for toys and handles them the fifth to the seventh month.

Can sit alone, seventh to eighth month.

Begins to stand with support, ninth to tenth month.

Able to stand alone, eleventh to twelfth month; to walk alone, twelfth to thirteenth month; and run alone, fifteenth month.

At one year children say "papa" and "mama" and some other words. At two years the average child begins to use short sentences.

A child that makes no attempt to talk at two years is backward and may be feeble-minded or deaf.

Long sickness, indigestion, rickets, premature birth, great feebleness, insufficient food, mother's illness are causes which delay development.

### **The Teeth**

There are twenty teeth in the first or temporary set; thirty-two in the second set.

The twenty temporary teeth appear in the following order:

1. Two middle front teeth, lower jaw, fifth to ninth month.

2. Four upper front teeth, eighth to twelfth month.

3. Two outer incisors (front teeth) in lower jaw and four front double teeth (small molars), twelfth to eighteenth month.

4. The cuspid teeth, known as eye teeth in the upper jaw and stomach teeth in the lower jaw, eighteenth to twenty-fourth month.

5. Four large double teeth, large molars, twenty-fourth to thirtieth month.

A well developed child has:—

At one year, six teeth; at one and a half years, twelve teeth; at two years, sixteen teeth; at two and a half years, twenty teeth.

The appearance of the teeth is delayed by rickets and sickness.

The cutting of teeth is indicated by fretfulness, profuse flow of saliva, drooling, sometimes slight fever and indigestion. These symptoms last two or three days. Sometimes there is no gain in weight for a week or two. Many symptoms attributed to

teething are not at all due to teething but to indigestion from wrong feeding.

### **Weight**

The weight of infants at birth varies greatly. The weight of the average child is about seven and one-half pounds, but there are cases on record of infants whose weight at birth was scarcely one-third as much. Cases are also on record in which infants have weighed double the average weight.

Careful observation of the weight is an important means of determining whether or not a child is doing well.

Gain in weight usually means that the child is thriving, while loss of weight has the opposite significance.

Careful records should be kept of the weight noted at birth and at subsequent weighings.

During the first six months the child should be weighed weekly. During the next six months the weight should be taken once in two weeks, and during the second year once a month.

The accompanying table gives the average

weight of infants and children at different ages up to ten years :

### **Weight and Height of Boys at Different Ages**

<i>Age</i>	<i>Weight</i>	<i>Height</i>
Birth	7½ pounds	20½ inches
3 months	12 "	23 "
6 "	15 "	26 "
9 "	17 "	28 "
1 year	21 "	29 "
2 years	26½ "	32½ "
3 "	31 "	35 "
4 "	35 "	38 "
5 "	41 "	41½ "
6 "	45 "	44 "
7 "	49½ "	46 "
8 "	54½ "	48 "
9 "	60 "	50 "
10 "	66½ "	52 "

The above weights are with ordinary indoor clothing, with the exception of the first four years, which are without clothes.

The height of girls under twelve is about the same as that of boys; the weight is one pound less.

Every mother ought to be made aware of the fact that during the first week an infant often loses four to six ounces. This is not a cause for alarm. After the first week, however, a very constant gain at the rate of about half an ounce a day should be made during

the first six months. During the next six months the rate of gain is two to four ounces a week.

At fifteen months the weight of a child should be three times as much as when born.

During the first year the gain in weight is practically continuous. During the second year the gain is irregular.

Bottle-fed babies gain less rapidly than those that are breast-fed.

There is often a loss in weight during hot weather, when cutting teeth, and during the period of weaning.

### **Sensation**

The general sensibility of a new-born child is very slight. It does not feel the contact of flies with the nose, mouth or eyes. The sensibility to pain is also comparatively slight during the first few days.

### **The Sense of Hearing**

During the first two weeks of its life the infant appears to be deaf. The reason for this is that the middle ear of the new-born child is filled with a thick mucus. This dis-

appears by the end of two weeks, so that air enters the ear through the Eustachian tube. The child then begins to hear. Loud sounds cause it to jump and to close its eyes. By the end of the third month the hearing becomes more acute, and the infant frequently turns its head when it hears sounds. Not infrequently infants five or six months old have much more acute hearing than the average adult.

### **The Sense of Sight**

The eyes of the new-born infant have no expression and during the first few days the infant seems not to possess the faculty of sight. That the eye is sensitive to light, however, is shown by the fact that the pupils contract in the presence of a strong light. This sensibility to light is much less than in a grown person, however, for a young infant can look straight at the sun with no apparent inconvenience. But this should not be permitted.

At four months an infant recognizes its mother or nurse, and is sometimes caused to cry by the presence of strangers. It reaches



for objects which it sees, sometimes making gestures toward them or touching them with the first finger. All babies are at first slightly nearsighted.

### **The Sense of Taste and Smell**

These senses appear to be active from birth. The youngest infant recognizes the difference between salt and sugar. Strong odors, such as those of ammonia and vinegar, are also readily recognized.

### **Hunger**

The sensation of hunger is evidently acute in a young infant, for when it is hungry it cries. After feeding, it seems contented and usually falls asleep.

### **The Intelligence**

The human infant shows much less intelligence at birth than the young of most other animals. The first month its existence is that of a living automaton. It breathes, eats, cries, sleeps. During the second month, evidence of dawning intelligence appears in smiling, by which means it shows comfort



and contentment. Other emotions, as those of pleasure, fear, anger, etc., are gradually developed. At five weeks, smiles and tears, with intentional crying, appear. Chirping and gurgling sounds are made. This is the infant's first language.

At the age of five or six months the infant attempts to form words, giving utterance to sounds of m, b, and later pronouncing such simple syllables as ma, pa, or mama and papa. At one year, a number of words are spoken more or less imperfectly. In general, girl babies learn to speak sooner than boys. A young child may be hindered from speaking by malformation of the mouth or by growths in the nose.

If a child is backward in learning to speak, or if when a year and a half or two years old it utters strange and incomprehensible sounds, there is reason for apprehension of idiocy or deafmutism.

Infants manifest jealousy at a very early age and show desires for attention. There is a difference in the mental state of breast-fed and bottle-fed infants. An infant at the breast is usually happy, contented, smiling,

amiable and lively, while the bottle-fed infant is quiet, pensive, seldom smiles and is irritable.

### **The Muscles**

The muscles of an infant are very poorly developed. The volume, in proportion to the weight of the infant, is only about half that of the adult, constituting a little less than one-fourth of total weight. Little control of the muscles is manifested before the second month. When two months old the infant is able to hold up its head. At three months voluntary movements appear.

### **The First Steps**

By the eleventh month an infant tries to hold himself in an erect position, and when twelve months old he shows a disposition to learn to walk, at first widely spreading the feet to maintain his balance. Breast-fed infants walk sooner than bottle-fed, and thin babies learn to walk earlier than fat ones.

*Infants should never be urged to walk.* As soon as a child is sufficiently developed to make walking possible and safe, it will make efforts to walk without being urged. It is not

only absurd to attempt to teach an infant to walk before it is prepared for walking by the development of its bones and muscles, but such unwise efforts often do permanent damage to the child by causing deformities. The legs may become curved, the vertebrae may become misshapen, or the child may be so fatigued and discouraged that it will for a long time refuse to make further attempts, so that its progress is greatly delayed. In general, children should be left to teach themselves to walk.

When infants are making their first efforts toward walking, it should be remembered that the undeveloped muscles of the child are incapable of prolonged effort, hence the infant should not be encouraged to continue its efforts after it seems disinclined to do so. An infant nearly always drops an object which it takes in its hands very soon after grasping it. This is because it is incapable of prolonged effort. Its muscles soon become tired.

### **The Bones**

During the first year of life important changes in the bones are taking place under

the influence of the thyroid gland, which is very active at this period of life. These changes are greatly disturbed by improper feeding, which may give rise to rickets, with the development of various deformities which will later appear.

The proportions of the infant should be carefully noted. The head is large in proportion to the body. The measurement around the chest is one-half inch less than around the head. At the age of two years the circumference of the head and the chest become equal. The upper part of the head enlarges first, while the face remains small. Over-feeding may give rise to unusual enlargement of the head, or hydrocephalus, a condition which often disappears with proper feeding. If the fontanelles are either swollen or depressed, there is something wrong with the child, and the cause should be carefully investigated.

### **The Abdomen**

A large abdomen is nearly always due to wrong feeding. The abdomen should not bulge at the sides.

The umbilicus is at first nearer the pubic bone. As the child grows, it rises to the mid-point between the lower end of the sternum and the pubis.

The pelvis is larger in girl babies than in boys.

### **The Skin**

At birth the skin is covered with an abundant oily secretion. This disappears after the first few baths, but the secretion of oil continues very active during the first year, especially about the head and face.

During the first few weeks the skin is dry, as young infants do not sweat.

The skin of an infant is exceedingly thin and delicate and thus easily irritated and infected.

The skin of a healthy child should have a rosy color. A pale, waxy skin is evidence of disease.

### **Breathing**

The young infant breathes 30 to 50 times a minute. At six months the average of respiration is 35 per minute, and the second year the number is 25.

Obstructions of the nose not only hinder breathing but also feeding, as they interfere with suction. They should be given prompt attention by a specialist.

### **The Circulation**

A new-born infant has more blood in proportion to its weight than has an adult. The heart is also larger in proportion to its weight than is that of an adult. The arteries and veins have equal capacity and are much larger in proportion to the size of the heart than in adults. For this reason, the blood-pressure of an infant is low and the heart action rapid. The pulse is usually about 120 to 140 per minute.

### **The Temperature**

The temperature of a new-born child is about 100 degrees, or a degree and a half above that of the mother. Soon after birth the temperature falls two degrees, becoming a little less than that of the mother.

### **The Urine**

The urine of a new-born infant is highly colored and very concentrated. It contains

much uric acid. This indicates the need of more fluid. Water should be given freely during the first days before nursing begins. It may be administered with a spoon or a nursing bottle or may be introduced into the rectum by a small enema. If this is not done, the concentrated urine is likely to leave behind particles of uric acid in the kidneys, which produce partial obstruction and may give rise to more or less permanent injury.

During the first three days after birth liquid should be given to the amount of not less than twenty ounces daily. Whenever, for any reason, feeding of a nursing infant is interrupted, water in amount equal to the usual volume of food should be given so as to supply the kidneys with the necessary amount of fluid.

The urine of a breast-fed infant contains less urea and other excretions than that of a bottle-fed infant, a very significant fact showing the advantage of breast feeding.

The urine of a healthy infant has little odor and is free from putrefactive products absorbed from the intestine which abound in the urine of an infant fed on cow's milk.



Control of the bladder during the night should be acquired by the age of two years—not later than three years. When older children wet the bed, give them no fluid of any sort after four o'clock. Have the child empty the bladder just before retiring, and awaken it one or two hours after it goes to sleep and require it to empty the bladder again.

A short cold bath given just at bedtime in children three years of age or older secures the complete emptying of the bladder.

### **The Stool**

Bowel movements occur in the healthy infant three or four times a day, usually soon after feeding. A less number of bowel movements means constipation and results in auto-intoxication and various "bowel troubles" and other disorders.

The stools of a breast-fed child have a golden-yellow color and the appearance of whipped egg. The color is due to the presence of bile. When exposed to the air, the stool acquires a green color due to changes in the bile, the result of contact with the air.



The stools have little odor, and are slightly acid from the presence of lactic or acetic acid.

The stools of a bottle-fed child are very different than those of a breast-fed child, and vary considerably. Such stools have more or less unpleasant odor, and are often very foul from putrefaction. Instead of being acid, the stool is alkaline and is brownish in color. If the milk has been boiled, the stool will be thicker in consistency and harder the longer the milk has been heated.

The stools of a healthy bottle-fed child should be neither green nor white, but egg yellow, and should be uniform in consistency, containing no granules or lumps and showing no curds or mucus.

# **Food and Feeding of Infants**



## Food and Feeding of Infants

THE proper feeding of the young infant is the most important factor in the promotion of its healthy development.

The normal food of the young infant is the milk of its own mother.

During the siege of Paris the mothers were compelled to nurse their infants because cow's milk was not obtainable. As a result of this natural feeding, the mortality of infants during the siege was reduced to one-third the ordinary mortality, while the mortality of adults was very greatly increased.

During the first two days the child should be nursed three to five times. Little milk is supplied during this period, but the child does not suffer seriously from lack of nourishment because it has a considerable amount of nutrient material stored up in its body. The milk supply increases on the third to fifth day; then the child should be fed eight times.

Perfect regularity should be observed in

the nursing; that is, the child should be fed at exactly the same hours daily.

The child should not be kept at the breast for more than thirty minutes at a time.

When for any reason natural feeding is impossible, the best and only really perfect substitute is a healthy wet nurse. Numerous elaborate studies of this subject by European experts have shown that cow's milk is by no means a perfect substitute for mother's milk.

### **How Cow's Milk Differs from Mother's Milk**

Mother's milk differs from cow's milk in a variety of ways:

1. The protein or tissue-building element of mother's milk is not casein but lactalbumin, a substance which forms, when undergoing digestion, very soft curds; whereas, the protein of cow's milk is casein, a substance which forms large hard and tough curds, which are only slowly digested by the feeble gastric juice of the child, and are left to putrefy in the colon, causing foul stools and bowel troubles.

2. Cow's milk contains an excess of lime,

five times as much lime as human milk, and much more than is required by the child. The young calf, to the nourishment of which cow's milk is exactly adapted, grows four times as fast as does the human infant, and hence requires a much larger proportion of bone-making material.

3. One of the most important differences between cow's milk and mother's milk is in the fact that mother's milk contains enzymes or ferments which are of great service to the infant, aiding digestion and assimilation. This is a very important matter for the human infant, since the gastric juice and other digestive fluids are all very feeble in the human infant and not able to perform their work properly without the aid of the digestive ferments found in the mother's milk. This is a remarkable provision of nature for the needs of the human infant, which is far more feeble and less advanced in development at birth than the young of most animals.

All the digestive fluids of the young infant are very feeble. The saliva possesses only one-tenth the starch-digesting activity which that of the adult possesses. The bile, which

in the adult is active in converting fats into soluble soaps, possesses very little digestive activity in the infant. The gastric juice is almost entirely lacking in acid. The infant is thus very dependent for good digestion upon the aid received from the digestive ferments found in breast milk but which are not found in cow's milk. This is one reason why young infants show symptoms of indigestion after feeding with cow's milk is begun. It is highly important for this reason also that in the weaning of children the change should be made gradually, so that the digestive organs of the child may have an opportunity to adapt themselves to the new diet.

Mother's milk activates, that is, excites to action the digestive secretions of the infant besides assisting digestion through the digestive ferments which it contains.

4. The milk of every animal is adapted to the young of its own species. This is a natural law which cannot be set aside. Certain infants seem to be so organized that cow's milk is a poison to them. Infants fed on cow's milk will get along very much better if one or two daily feedings of mother's milk

can be added even though the amount is very small indeed.

5. The fat as well as the protein of cow's milk is less easily digested than is that of mother's milk.

### **The Artificial Feeding of Children**

Experiments made by Morro and others have shown that it is very difficult indeed to raise the young of any animal on the milk of another animal. Young ducks fed by Morro on woman's milk all died. Breuning fed cow's milk to guinea pigs and rabbits. These also died. Other investigators have had similar experience.

Cow's milk is at best but a poor substitute for the natural food of the young infant.

Dr. Hamburger declared that the casein of cow's milk is a poison to the mucous membrane of a child.

The tissues of a child nourished with the milk of a cow differ from those nourished with mother's milk; they are much more liable to disease.

The art of artificial feeding of infants consists, as is well said by Le Sage, "in training



the digestive glands to deal with food which is not altogether natural to the infant." It has been shown by Le Sage and others that the digestion of cow's milk requires double the amount of work on the part of the stomach required for the digestion of breast milk, and it has been shown that cow's milk, even after it has been digested, differs in character from the natural food of the infant, is absorbed with more difficulty, and is lacking in certain elements necessary for the perfect nutrition of the child. In artificial feeding, it is necessary to correct these evils so far as may be done by modifying the cow's milk in such ways as better to adapt it to the infant's needs; that is, to "humanize" it.

### **The Microbes of Infancy**

Escherich, a great German authority, showed more than thirty years ago that within a few hours after the birth of an infant its intestine is occupied by acid-forming bacteria. It was later (1900) demonstrated by Tissier, of the Pasteur Institute, Paris, that these acid-forming bacteria which take possession of the intestine within six hours

after birth in summer and twenty-four hours in winter, protect the intestine from the invasion of putrefactive bacteria, which are always harmful to infants. So long as the child is fed on breast milk, the acid-forming bacteria continue active in its intestine, the stools are inoffensive, usually slightly acid, and the child continues to thrive. But when a change is made to cow's milk, Welch's bacillus and numerous other putrefactive bacteria make their appearance. These putrefactive bacteria are highly dangerous. They cause decomposition of fats and proteins, with the production of highly virulent poisons. Some of these poisonous substances give to the stools of such children an offensive odor. These poisons, as has been shown by Metchnikoff, are very deadly. When given to rabbits even in small quantities they produce death.

There are many of these putrefactive poisons (as many as sixty ptomaines are known), to which the young child is constantly exposed. Many of the germs which produce these poisons find their way into the intestines of the child through cow's milk,

others are derived from house dust, which the child gathers as it creeps about the floor. The most dangerous of all foods for the infant is meat, which always contains enormous quantities of harmful germs.

When the putrefactive bacteria are present in the intestine only in very small amount, the child suffers comparatively little; but when through over-feeding, constipation, or the feeding of meat or badly infected milk, the number of putrefactive bacteria becomes considerably increased, severe local and general poisoning occurs, as indicated by diarrhea, dysentery, cholera infantum, constipation, intestinal catarrh, colitis, shown by the presence of mucus or slime in the stools, and various general disorders. The child becomes pale, ceases to increase in flesh, is peevish and restless and sometimes suffers with convulsions.

The mucous membrane of an infant, according to Behring, is less resisting than that of an adult. It does not prevent the passage of microbes into the blood.

Thousands of children die every year as a result of food poisoning. Of the 300,000

children who die annually in the United States, probably not less than nine-tenths are victims of wrong feeding.

Few bacteria are found in the mouth of a breast-fed child. The bacteria, or germs, increase greatly in number and variety in bottle-fed infants.

### **Food Constituents**

The food of an infant, like that of an adult, must contain all the different food principles in suitable proportions for complete nutrition and proper development. These necessary elements are:

1. *Protein*, the blood and tissue forming element.

2. *Fat*, heat producing and fat forming.

3. *Carbohydrates*, in the form of lactose or milk sugar, or maltose found in malt sugar. Cane sugar is not a wholesome food for infants.

4. *Salts*, chiefly lime salts, of which mother's milk contains  $2\frac{1}{4}$  grains to the pint, furnishing to the infant  $4\frac{1}{2}$  grains daily. Cow's milk contains 11 grains to the pint. Whole wheat flour contains four grains

to the pound, fine flour only one grain; beans and peas contain eight grains to the pound; meat only one-half grain to the pound and meat broths none at all.

5. *Iron.* Iron is needed for blood building, especially after the eighth month. Cow's milk is deficient in iron, especially when boiled or sterilized.

Children fed on cow's milk often become anemic, because they absorb from cow's milk less iron than from breast milk. It has been shown, for example, that on a diet of cow's milk the amount of iron absorbed by the child is less than half that absorbed when fed on breast milk, and the amount utilized by the body is only one-third as much. When cow's milk is boiled, the amount of iron assimilated from the food is still less, about one-tenth that derived from mother's milk. Milk contains very little iron at best, much less than other foods. This is the reason why an infant fed on cow's milk needs other foods in addition.

According to Michel, an eminent European authority, one-third to one-fourth of the increase in weight of the infant is due to

protein (casein) derived from its food. The breast-fed infant fixes in its body one-third of the protein absorbed from his food, while the bottle-fed infant fixes or retains only one-half as much.

An infant needs more fat than an adult. A breast-fed infant assimilates twice as much protein and fat in proportion to its weight as does an adult.

A breast-fed child can begin to take other food than milk much earlier than a child fed on cow's milk, or as early as the sixth month. In an emergency, an infant with whom cow's milk does not agree, may be given farinaceous food almost from the beginning, such for example, as thin gruel mixed with malt sugar. Some old nurses add their own saliva to gruel when feeding very young children. This may be an advantage in certain cases if the nurse is thoroughly healthy and has a clean mouth.

### **Eggs and Meat Harmful to Infants**

All eggs contain small quantities of poisonous substances to which certain adult persons and all infants are very susceptible. On this



account, they are very likely to prove harmful to young infants.

Czerny and Finkelstein will not permit the use of eggs by children under three years of age. Egg albumen produces poisonous effects in young infants, as also in young animals.

The white of an egg is more harmful than the yolk. Its use is often followed by symptoms of poisoning, vomiting, diarrhea, etc.

The use of meat by young children, according to Le Sage, produces very severe constipation, with foul-smelling stools and a large amount of uric acid in the urine.

Meat is an unnatural food for human beings. Even adults are injured by its use. While easily digestible, it introduces into the body various poisons and even living parasites, trichinae, tapeworm, etc., which do endless mischief. Even worse evils result from the decay of undigested portions of meat in the colon. Enormous numbers of disease germs are thus developed in the intestine, and the poisons which they produce are absorbed into the body, producing general and great disturbances of nutrition, such as emaciation,

rickets, sleeplessness, irritability. This condition of general poisoning is shown by bad breath and foul smelling stools before more serious symptoms appear.

Meat, including fish and fowl, is most unwholesome for children of all ages. The mortality rate in a large children's hospital in New York was reduced one-half by wholly discarding meat from the dietary.

The chief objections to meat for young children are two :

1. Not all the meat is digested even under most favorable conditions. The undigested portions rapidly undergo putrefaction in the lower intestines. The poisons produced are the same as those found in decaying flesh elsewhere. The delicate intestines of the young child readily permit the passage of both the germs and their poisons, causing rickets, rheumatism, feebleness, stunted growth, and other disorders, and prepare the way for tuberculosis and other grave diseases.

2. The infant stomach is deficient in hydrochloric acid which is essential for the digestion of meat, so that meat is not well digested, large portions being left to decay in



the colon, causing foul stools and most pronounced autointoxication.

The constipation which results from meat eating causes autointoxication, colitis, emaciation, nervousness, loss of appetite, stunted growth, convulsions, and all the other ill effects of meat eating.

Beef tea, meat juice and meat broths are in the highest degree unwholesome for infants and young children. These preparations have practically no food value. They represent the excretory products of the meat and encourage the growth of pernicious germs in the intestine.

*Gruels* of various sorts may be added to the milk after the age of three to four months and may be given to bottle-fed babies from the very beginning if necessary.

*Orange juice* should be used freely after the first three months—the juice of one orange daily. Orange juice is necessary when sterilized milk is used, to avoid the evils which arise from the continuous use of cooked food. Cooking destroys the enzymes which the milk contains and which are to some extent supplied by the fresh orange juice.

*A monotonous diet* is harmful to infants. Variety is necessary in order to furnish to the body all the various elements which it requires. In artificial feeding, milk or mixtures of milk and malt sugar, either full milk or diluted, may be used as the staple articles, but after early infancy the diet should be varied from day to day through the use of purees of fruits and vegetables.

*The fat of cow's milk* is one of the most serious causes of trouble in the feeding of infants. Many infants are unable to digest the amount of fat contained in cow's milk and the undigested portion undergoes decomposition in the intestines, forming irritating and poisonous substances. An excess of fat is one of the most common causes of indigestion and bowel troubles in infants. This difficulty is overcome by diluting the milk with skimmed milk or with water or by removing a part of the cream and adding malt sugar.

*Too long nursing* is exceedingly injurious for the reason that milk is deficient in iron, containing only one-sixth as much iron as is contained in the tissues. The young infant derives its first supplies of iron needed for

blood and tissue building from its own liver, in which there is stored up at its birth five to nine times as much iron as is found in the liver of an adult. By the eighth month this store of iron is exhausted, so that the liver is no longer able to make up the deficiency of iron due to an exclusive milk diet. It is for this reason that not later than the eighth month, feeding by foodstuffs containing iron should be begun. Such foods are best given in the form of purees. Purees of vegetables and fruits should be given at least as early as the eighth month in breast-fed infants and earlier in infants fed on cow's milk.

### **Malt Sugar Versus Cane Sugar and Milk Sugar**

Maltose or malt sugar is the most easily digestible of all forms of sugar for an infant. It is the only sugar which is native to the body, as it is produced in the body in the digestion of starch.

Ogata and others have shown that cane sugar is irritating to the stomach.

Kellar has shown that an infant may appropriate more than twice as much maltose as lactose.

Escherich showed that the free use of lactose produces digestive disorders.

The use of cane sugar produces *maladie du sucre*, or sugar disease, according to Bellet, an eminent French authority, and sometimes causes the appearance of diabetes in infants.

Cane sugar should never be added to the food of a young infant, and candy should never be given to either infants or children. This unwholesome sugar is the cause of much disease and suffering in both children and adults.

Fruit sugar is the most wholesome for infants. This is true also of the juice of stewed raisins; also the freshly expressed juice of sweet grapes, oranges, pears and sweet apples. All sweet juices contain a considerable amount of fruit sugar, which requires no digestion. It is readily assimilable and highly nourishing.

### **How Much and How Often to Feed**

The amount of food required by a child depends upon its age and its size. In general, children require much more food in propor-

tion to their size than do adults. For example, a child a week old may require one-sixth as much food as an adult weighing twenty times as much; while a child one year old may require one-third as much food as an adult weighing seven times as much.

### **A Simple Plan For Artificial Feeding**

Many complicated methods and formulas for artificial infant feeding have been proposed and recommended by various authorities. Numberless special foods have been prepared and offered for sale at high prices. Extended experience in foundling and other hospitals as well as in private homes has fully demonstrated that these complex and troublesome methods and expensive foods possess no real advantages and that the best results may be attained by very simple and inexpensive means.

Recent experience in both this country and Europe justifies the claim that the following simple plan of artificial feeding may be relied upon as the best known for the infant as well as the simplest, least expensive, and

least troublesome to the mother, and hence most practical for general use:

#### FEEDING SCHEDULE

During first year: Number of feedings in twenty-four hours, first month, 8; second month, 6; after second month, 5.

*Milk Mixtures:* First month, one-third milk, two-thirds water, with two ounces Malt Sugar to the quart. One ounce gives 14 calories.

Second to sixth months, half water, half milk, with two ounces of Malt Sugar to the quart. One ounce gives 17 calories.

Third quarter—7th to 9th months—use two-thirds milk, one-third water, two ounces of Malt Sugar to the quart. One ounce gives 21 calories.

Fourth quarter—10th to 12th months—use full milk with addition of two ounces of Malt Sugar to the quart. (Two and one-third ounces of meltose or malt honey are the equivalent of two ounces of Malt Sugar.) One ounce gives 25 calories.

<i>Age</i>	<i>Weight</i>	<i>Amt. of Food</i>	<i>No. of Feedings</i>	<i>Amt. of Feeding</i>	<i>Calories Daily</i>
Birth	7 lbs.	20 oz.	8	2½ oz.	350
1 mo.	9 "	24 "	6	4 "	400
2 mo.	10½ "	28 "	5	5½ "	475
3 mo.	12 "	30 "	5	6 "	510
4 mo.	13 "	32 "	5	6½ "	545
5 mo.	14 "	34 "	5	7 "	575
6 mo.	15 "	36 "	5	7¼ "	612
7 mo.	16 "	32 "	5	6½ "	640
8 mo.	17 "	33 "	5	7½ "	660
9 mo.	18 "	34 "	5	8 "	680
10 mo.	19 "	28 "	5	5 2/3	700
11 mo.	20 "	29 "	5	5¾ "	725
12 mo.	21 "	30 "	5	6 "	750

Infants under one year should not take more than 32 to 36 ounces of food. In changing to stronger diet, that is from half milk to two-thirds milk, or two-thirds milk to full milk, the quantity should be reduced at first. After the child weighs eight pounds, the amount may be increased one ounce of the full milk mixture for every six ounces that it gains in weight.

### **Cow's Milk**

Cow's milk, as well as mother's milk, is influenced by food. Hence when cow's milk is used, care should be taken to know that the animal is properly fed.

A curious fact not generally known is that



healthy cow's milk contains about half a dram of citric acid to the quart. Barlow's disease is believed to be due to a deficiency of citric acid.

### **To Sterilize Milk**

Cook the milk in a double boiler. Keep the water boiling for an hour, or better, for an hour and a half.

### **To Pasteurize Milk**

Heat the milk to 165 degrees for twenty minutes. Cool immediately after heating by placing on ice, and keep cold until ready to use. Such milk will keep sweet for a day or two or longer if pasteurized daily.

### **Certified Milk**

This is milk which is prepared under special conditions. Cows, stables, milkmen, methods of handling, and the milk itself are all carefully inspected by a qualified bacteriologist. The milk is examined weekly and the bacteriologist certifies to its quality. Such milk contains only a few hundred, or at most not more than ten thousand bacteria to the quarter teaspoonful, whereas ordinary com-



mercial milk may contain from 200,000 to 20,000,000 bacteria. Certified milk is much the best for the infant and should be used when possible.

# **General Care of the Child**



# General Care of the Child

## Sleeping

A NEW-BORN infant should sleep most of the time. During the first month of its life an infant usually goes to sleep after every feeding and wakes regularly at the next feeding time.

From the very beginning an infant should be trained to sleep all night if possible. Very feeble infants may at first be given one feeding at midnight.

During the second and third months the child will remain awake a quarter of an hour to half an hour between feedings.

At the age of five months the infant will lie awake an hour at a time.

By the end of twelve months it will sleep a few hours in the forenoon and a few hours in the afternoon, remaining awake the rest of the time during the day.

The child should be taught to sleep in a cradle or crib, and should go to sleep in a

dark, quiet room. Noise renders sleep unrefreshing, even if it does not awaken the child.

*Infants should never sleep with older persons.*

Care should be taken that the bed is not too soft and the child is not covered so warmly as to be overheated. An infant should sleep alone. The same plan is best for older children and adults.

The infant's sleeping should be silent and the mouth should be closed. If the mouth is open during the sleeping, and if drooling occurs or the sleep is uneasy, the mouth and nose should be examined by a specialist, as obstructions probably exist.

The child should not always sleep in the same position. Its bones are soft and deformities may easily be produced.

### **Changes of Position**

A constant horizontal position is not good for infants. Several times a day the child should be taken up and held in a vertical position. Children lying too long in one position cease to grow and may become mis-

shapen. Lying too long on one side sometimes gives rise to infection of the ear. Children thrive better when taken out of their cradles and given the benefit of the vertical position at frequent intervals and for a sufficiently long time to aggregate two or three hours in the course of the day. This is necessary exercise for the child.

The stomach of an infant is horizontal, not vertical as formerly supposed. This is one reason why a child should be elevated to a vertical position several times a day, to aid in emptying the stomach.

### **Outings**

It is perfectly safe to take an infant out as early as the seventh day in summer and the fifteenth day in winter.

Every infant should have at least two outings a day for half an hour or an hour each time.

Children do better living in the open air a greater part of the time.

A child should be accustomed to go out of doors in all sorts of weather, and if thus trained, will not be likely to take cold.

When going out of doors, the infant must of course be covered well, so that it is not chilled. The body should at no time be chilled. The purpose of the outing is to give the child an opportunity to breathe cool air and to come in contact with the sunlight.

When for any reason children cannot be taken out of doors, they should be given the benefit of fresh air by opening the windows wide during the night and for as many hours as possible during the day.

### **Exercise**

To give the young child an opportunity for exercise, as little clothing as possible should be worn. Three or four times a day all the clothing should be removed, with the exception of the napkin. Almost the whole surface of the body will thus be exposed to contact with the light and air.

The child should not be placed upon the floor, as it will gather germs with its moist fingers, which will be carried to the mouth, and thus become infected. Clean sheets should be spread upon the floor. These should be surrounded with a suitable fence

and the child should be placed in this enclosed space.

Crying to a moderate extent does a child no harm. It is indeed an excellent breathing exercise. It has a decided gymnastic value. But crying produced by pain, thirst, or overheating from too much clothing, should of course receive immediate attention. Intentional crying, that is, crying with a purpose to obtain some coveted favor, should be disregarded.

Crying through sickness is accompanied by fretful ejaculations or by moaning.

Crying due to bad temper is accompanied by kicking, striking, stiffening of the body, and other easily recognizable signs.

Babies under six months of age should not be played with. Attempts to play with such young children make them irritable and nervous and exhaust their feeble vital energies. It is also unwise to play with children at bedtime or near the time for retiring. Their sensitive nerves become so excited, sleep is often prevented.

In lifting the child to give it exercise or for any other purpose, grasp the clothing below



the feet with the right hand, slip the left hand under the body from below upward until the head is reached, supporting this with the hand and lifting the child on the left arm.

### **Bathing**

In general, the child should have a tepid bath daily. Some advise that the general bath should not be administered during the first ten days, or until after the cord is separated. During this period the skin may be kept clean by sponging.

The temperature of the bath should be at first about 98 degrees, cooled to 90 degrees at the close. At the end of the second month the bath may be cooled to 80 degrees, and the third month to 75 degrees.

The duration of the bath should be three to five minutes. In very hot weather the child may be kept in the bath at 95 to 93 degrees for an hour. This bath, known as the neutral bath, is a very excellent means of combating the depressing effects of heat.

Liquid petrolatum, fine white vaseline, or albolene should be always applied after a bath and before giving a prolonged bath. If

soap is used in the bath, a very free application of oil should be made afterward to the skin to restore the natural oil, which is an important means of protection.

Bath sponges should never be employed in giving a bath. Use cheesecloth instead—a fresh piece every day. A bathcloth knit from cotton yarn may be used instead of cheesecloth. Two cloths should be employed—one for the face, eyes and head, another for the rest of the body and the genitals. The bath cloth should be boiled daily.

### **Care of the Skin**

The skin should be cleansed daily with castile soap and soft or distilled water. When hard water is used, an insoluble soap, formed by combination of the soap with the lime of the water, is deposited upon the skin and may become the cause of very troublesome skin affections.

After the bath, all the soap should be carefully removed by rinsing several times with soft or distilled water. The skin should be then carefully dried with a soft towel and oiled or dusted with rice powder or a good

talcum powder. It is important to apply the dust between the toes, under the arms, to the groins, about the neck, under the chin, behind the ears, at the bend of the arm, and beneath the knees.

A good powder may be prepared by mixing together one part finely powdered boracic acid with two parts of corn starch.

When the skin becomes rough or irritated, soap should be avoided altogether. Bran baths may be given—about a cupful of bran in two gallons of warm water; let it soak for half an hour before using. The bran should be enclosed in a bag composed of several layers of cheesecloth. It should be squeezed frequently during the soaking. If the skin is broken, cleanse the sore surface with tepid or soft water, using bits of cotton or cheesecloth; then dry with cotton and apply liquid petrolatum.

### **Care of the Genitals**

The genitals should be daily cleansed, first with soft water containing a little castile soap, then with pure soft or distilled water, finally with boric solution.

The parts should be kept thoroughly clean. Long contact with soiled napkins often gives rise to troublesome and even serious infections.

### **Care of the Mouth**

Some authorities advise that no special attention should be given to the mouth, but it is probably wiser to cleanse the mouth after each feeding with a swab consisting of a long wooden toothpick with a little absorbent cotton twisted around the end. Especial attention should be given to cleansing the space under the tongue and between the gums and the cheeks. If the mouth is sore, it should be carefully washed with warm water before and after feeding. After washing, apply a soda solution consisting of a teaspoonful of bicarbonate of soda in a pint of water, then boric acid solution—a teaspoonful to the pint.

### **Prickly Heat**

This is a skin eruption, presenting very fine red pimples. It is caused by the irritation produced by flannel clothing or by overheating of the skin. Contact of flannel with the

skin should be avoided. Cotton or linen fabrics alone should be allowed to come in contact with the skin.

The affected surface should be bathed several times daily with vinegar water consisting of one part of vinegar to three parts of water. After applying the vinegar lotion, dry the parts and apply the starch and boric acid powder.

### **Clothing of Infants**

It is first of all important to avoid overheating. Infants are often kept in a depressed and weakened condition by too much clothing. This matter is especially important in the summer season. At the same time, the child should be dressed warm enough so that it may under no circumstances become chilled. A severe chill may be the beginning of pneumonia or some other dangerous disease.

Children are more sensitive to change of temperature than are adults, and hence need special protection. By careful training they may be readily "hardened," that is, trained to resist the effects of temperature changes. Children who are "hardened" by spending a

large proportion of the time out of doors and are clothed intelligently according to the season are little likely to take cold.

In cold weather, warm leggings and jackets should be worn whenever the child is exposed to cold air. The infant should be clothed in such a way that the movements of the limbs will not be too much interfered with.

The natives of hot countries rear their infants without clothing. In the Congo region it is the custom to allow the infant to sleep naked upon the ground to harden it and to render it more agile. In consequence, the child learns to walk very early. The infant is allowed great freedom. As soon as it can hold itself erect, it is permitted to run everywhere, with a bell attached to its neck. After the first months of infancy the wild infant has a much better chance for normal development than the child of civilization.

### **Dressing the Infant**

During dressing the infant should lie across the lap. The clothing should be drawn on over the feet.

Very young infants require an abdominal band. This may be dispensed with after the age of four months. Feeble and lean infants require the use of a flannel binder until the age of five or six months.

### **Napkins**

The napkin should be made of very soft material.

It should be removed at once when soiled, and should never be used a second time without washing in boiling water.

Immediately after removal, napkins should be placed in a tight receptacle or should be immersed in water, being careful to protect from exposure to flies. This is highly important, for it is well known that flies carry germs and frequently cause bowel troubles, and even typhoid fever, by depositing upon food the germs which they have gathered by contact with human excreta.

In washing napkins, they should be well rinsed in cold water, then boiled in soap for fifteen or twenty minutes. The soap should



be well rinsed out of them. The napkins should be laundered without the use of starch or blueing.

### **Weaning**

Weaning should begin at nine or ten months. The process should be gradual. The first few days the child should be given one artificial feeding in place of nursing. After a few days two feedings may be given; a few days later, three feedings; thus continuing until the breast feeding is dropped altogether.

A good method of preparing a child for weaning is to give water in a nursing bottle several times a day. By this means, it may be accustomed to the use of the bottle.

At the age of ten months, the child may be fed with a spoon or cup.

When the child is a year old, it should be weaned from the bottle and fed altogether from the spoon or cup.

A child should never be weaned from the breast for any other reason than illness of the mother or child, the arrival of the proper age for weaning, or some other equally good



reason. The practice many mothers have of weaning children to suit some social or other convenience is highly censurable, indeed almost criminal. This practice is responsible for the death of thousands of infants yearly. *The mortality of bottle-fed infants is three or four times as great as that of breast-fed children.*

### **Toys**

Great care should be used in selecting toys to avoid such as may be swallowed or may be capable of producing injury in any way if put in the mouth. Playthings must be kept clean. Infants should never be placed upon an unprotected floor or carpet. Floor dust is largely made up of germs from the droppings of animals in the street which are blown in through open doors or windows or brought in on the feet. A child creeping upon the floor soils its hands. When the fingers are placed in the mouth, these dangerous germs are carried with them and thus the stomach and intestines become infected. If the child is placed upon the floor, a clean sheet should first be laid down as a protection.

### **Kissing**

Infants are often infected with disease germs by kissing on the mouth. This should be absolutely prohibited. Promiscuous kissing should not be allowed, and kissing on the mouth should not be permitted under any circumstances.



# Hygiene for Nursing Mothers



## Hygiene for Nursing Mothers

DIET: Nursing mothers should make free use of fruits and fresh vegetables, avoiding strongly flavored vegetables, as onions and garlic. Tea, coffee, wine, beer, condiments, cocoa, pickles, ice cream, rich gravies, sweet-breads, fish, and oysters should be altogether avoided by the mother. It is best also to avoid flesh meat. All kinds of meat foods are contaminated with bacteria and promote intestinal autointoxication, through which the infant as well as the mother may be poisoned.

The diet should be bulky, that is, should contain a large amount of indigestible residue. The best foods for bulk are lettuce, carrots, beets, greens, spinach, huckleberries, raspberries, prunes, figs, apples, apricots, graham bread, granose biscuit or toasted wheat biscuit, shredded wheat biscuit, wheat flakes, cracked wheat, rye bread, ripe olives, and grapes. Oranges are excellent, and fruit juices of all sorts, because of the fruit sugar and acids which they contain.

If the bowels do not move after each meal or three times a day, Colax or Colax and Para-lax should be used regularly. Colax is prepared Ceylon moss. Para-lax is an emulsion of paraffine oil. These are remarkable remedies which alone or in combination, are the most reliable means of moving the bowels and have the great advantage that they create no irritation and do no harm of any sort. They are not drugs, but may be regarded as supplementary foods, though not digestible or absorbable.

Care should be taken to keep the bowels freely open. They should move three or four times a day, or at least after every meal. If necessary, the enema should be used, employing one to three pints of water at a temperature of about 80 degrees.

The amount of fat should be increased about 25 per cent above that ordinarily required. The amount of protein should be 50 per cent greater.

### **To Increase the Flow of Milk**

Certain foods tend to increase the flow of milk. This is particularly true of Malted

Nuts, of the whole-grain cereals, cracked wheat and oatmeal, free water-drinking, and the free use of juicy fruits. Not less than three or four pints of water should be taken daily, in addition to the liquids taken with the meals. Malted Nuts and Lacnut are perhaps the best food preparations known for increasing the flow of milk.

The mother should take plenty of out of door exercise, should have abundance of sleep, should be careful to avoid excess of fatigue, worry, care and all excitement, and should endeavor in all possible ways to cultivate health. Out of door sleeping and daily out of door exercise are excellent means of promoting health. Two of the most important rules for a nursing mother are that the bowels should be kept open and a calm, contented state of mind maintained.

### **Causes of Variation in Mother's Milk**

Both the quality and quantity of mother's milk is affected greatly by food and by various other circumstances. It is important that this fact should be better understood, as breast-



fed infants often suffer seriously because of deterioration of the mother's milk.

A hearty meat diet has a tendency to lessen the secretion of milk, and when long continued gives rise to atrophy of the mammary glands, as shown by Chalmers Watson, of Edinburgh.

Long nursing gives rise to deterioration of the milk, the casein or protein of the milk diminishing while the fats and sugar remain without change.

The quantity of milk furnished by nursing mothers differs greatly. It may only be sufficient to supply the infant with a few ounces two or three times a day for supplementary feeding in connection with bottle-feeding, or the amount may be as great as three or three and one-half quarts. No matter how small the amount may be, the infant should be permitted to nurse while taking other food sufficient to make up the deficiency. A very small amount of mother's milk given daily may suffice to avert serious injury and to insure normal development.

Medicines taken by the mother appear in the milk within a short time after they are

taken and may produce serious effects upon the delicate organism of the young infant.

Thyroid extract taken by a mother gives rise to vomiting and other symptoms of poisoning in a nursing infant.

Chloroform and ether, when used for anesthesia, appear in the milk in such quantities that it cannot be safely taken by an infant until at least six hours after the patient has recovered from the anesthesia.

Mothers should know that the use of purgatives and other drugs diminish the flow of milk.

Fever in the mother renders her milk unfit for food for an infant, because the fever-producing poisons pass into the milk.

When a mother becomes angry, her blood is poisoned, the milk also becomes poisonous, and her nursing infant may be made seriously ill. Numerous cases are on record in which violent convulsions have been produced in a nursing infant because the mother became angry.

Worry, as well as anger and other strong emotions, may so modify the milk as to cause symptoms of poisoning in an infant.



# **Common Diseases of Infancy**



# Common Diseases of Infancy

## Constipation

CONSTIPATION is the source of many of the worst troubles of infancy. The infant's bowels should move three to five times a day. The natural order is a movement after each feeding.

When the stools diminish in number the undigested remnants of food remain so long in the bowels that time is given for putrefaction. Putrefaction is shown by the offensive odor and change in color of the stool from egg-yellow to brown or green.

It must be remembered that in a constipated infant the stools are not necessarily hard. They are only less frequent than normal.

If the bowels do not move properly, give Malt Sugar or increase the amount given. Every infant should take two ounces of malt sugar a day. The amount may be increased, if necessary, to two and one-half ounces, and in infants more than a year old to three

ounces. Malt Sugar is an excellent laxative. If necessary, it may be administered by enema as a means of stimulating bowel action and correcting an infected condition of the colon. Two ounces of Malt Sugar should be dissolved in four ounces of water and administered by enema. Malt Sugar is a powerful stimulant to the colon. If this measure does not suffice, one or two teaspoonfuls of Para-lax may be given to the child once or twice a day, mixed with its food or by enema, or may be given by itself, diluted with water and sweetened with Malt Sugar.

Prunes and figs are among the most laxative of fruits. The best way of preparing prunes is to rinse them with boiling water, then soak them in cold water for twenty-four hours and eat without cooking.

Sleeping in cold air is a great aid to bowel movement in infants as well as in adults.

Exercise is of great value. A young infant may be exercised by holding in the arms in an erect position. This should be done four or five times a day. Infants which are left constantly in the crib do not thrive.

A favorite exercise with most infants is

lying on the back and kicking its legs. This is a capital exercise for the abdominal muscles of infants as well as adults. Several times a day remove the clothing all but the napkin and let the baby exercise its legs without restraint for ten minutes. The temperature of the room should be 75-80.

A certain amount of crying is good exercise for the infant. It especially encourages bowel action by strong compression of the intestines.

Proper care of the bowels is absolutely essential to the health of the infant. Constipation, that is, less than three daily stools, leads to loss of appetite, indigestion, rickets, arrested growth, hydrocephalus, skin eruptions, scurvy, and all sorts of bowel troubles. Indeed, constipation and the resulting auto-intoxication are the real cause of a very large share of the disorders from which infants suffer. An infant whose bowels move only once a day is badly constipated; even two movements a day are insufficient. The bowels must move three or four times a day for health, and a stool after each feeding is better.



### **Bowel Troubles**

When the child suffers from looseness of the bowels, with fever and disturbances of the stomach, the food should be withdrawn for a day or two. Water only, or water with Malt Sugar, and diluted fruit juices, should be given. After a day or two, gruels prepared from Toasted Rice Flakes, Toasted Rice Meal or Wheat Meal, Toasted Wheat Flakes, barley or oatmeal, should be given. The gruels should be sweetened with Malt Sugar, never with cane sugar. Cream, milk, and eggs should be entirely avoided in such cases until the bowels become normal and the tongue clean.

The *Bacillus Bulgaricus*, or yogurt ferment, has been found of very great service in the treatment of bowel disorders of children. A couple of Yogurt tablets dissolved in a spoonful of water should be given after each feeding with a little malt-dextrose sugar. In cases of acute indigestion, whey may be given. The milk may be curdled by adding a little lemon juice, allowing it to stand a little while, then draining off the whey through a

cloth. A couple of Yogurt tablets should be added to the whey at each feeding.

Whenever the stools are brown, black or foul-smelling, serious infection of the intestines with wild putrefactive bacteria exists. In healthy children, the stools are a soft, smooth yellow without lumps, and odorless or with a slight sour odor. The odor is the result of the presence of acetic acid, produced by *bacillus bifidus*, which has been shown by Professor Tissier to be a protective, acid-forming germ which takes possession of the intestines of infants within a few hours after birth. As long as these are present, the child remains in health. When they are lost, the stools become foul, and it is necessary to restore the acid-forming bacteria by giving the *bacillus Bulgaricus*, another acid-forming germ, with *glycobacteria*, which may be conveniently administered by means of Yogurt tablets.

Accumulation of gas in the bowels, distension of the abdomen, colicky pains, green stools, flatulence, offensive stools and appearance of mucus in the stools are indications of intestinal infection.

Dr. Clark recently reported in the *Journal of the American Medical Association* the successful treatment of a large number of very serious cases of bowel troubles in bottle-fed babies by means of the *bacillus Bulgaricus*. This simple method did not fail to effect a cure in every one of a long series of cases, many of which were of the most severe type. Yogurt is the best preparation of this protective ferment with which we are acquainted.

### **Fever and Diarrhea**

When a child has a fever with loose bowels and vomiting, give water only for a day or two. Give one or two Yogurt tablets dissolved in a teaspoonful of warm water every two hours. The purpose of this is to introduce protective bacteria which will aid greatly in driving out the putrefactive bacteria which are the cause of the diarrhea and the auto-intoxication. A quarter teaspoonful of Malt Sugar should be given with the tablets to nourish the ferment. Plenty of water must be given, not less than a quart in twenty-four hours. After a day or two give thin gruels of rice, barley and oatmeal sweetened with

Malt Sugar in the proportion of an ounce of sugar to the pint of gruel. Whey may be given with special advantage in some cases, especially when bowel trouble is chronic. A quart of whey may be given in twenty-four hours, with two Yogurt tablets at each feeding.

### **Mucus in the Stools**

The presence of mucus in the stools is a certain indication of infection. The formation of mucus is a defensive effort by which the mucous membrane seeks to protect itself against the attacks of poison-forming bacteria. Constipation is a common cause of infection and the development of mucus. By the too long retention of fecal matters in the intestine putrefaction occurs and the development of poison-forming bacteria, which produce irritation of the mucous membrane and the formation of mucus.

Cow's milk is a common cause of mucus in the stools, not only through the formation of hard indigestible curds but through infection by means of manure germs, which are always found in milk and which in commercial milk

swarm in enormous quantities. The presence of curds in the colon is quite unnatural. The casein of which the curds are formed should be digested and absorbed in the small intestine. When these masses of undigested food find their way into the colon, digestion is no longer possible. Instead, they become the prey of countless numbers of bacteria, which give rise to putrefaction and the formation of poisons which give to the stools a bad odor and which by absorption into the blood produce loss of appetite, nervousness, wakefulness, convulsions, arrested growth, and prepare the way for tuberculosis and numerous other maladies.

The appearance of mucus in the stools is always an indication for change of diet and increased activity of the bowels. Even when diarrhea may be present, the indication is still for increased action of the bowels. The bowels must be frequently and completely emptied so as to get rid of the putrefactive bacteria which are the cause of the trouble. Milk, eggs, meat, and all foods containing these substances must be for the time being suppressed. Gruels with malt sugar should

constitute the dietary. An enema consisting of water with the addition of an ounce of malt sugar or malt syrup (meltose) to the pint should be administered twice daily. The child should be given Yogurt tablets or a special culture containing the *bacillus Bulgaricus*, *bacillus bifidus*, and *bacillus glyco-bacter*. Fomentations to the abdomen two or three times a day and the moist abdominal bandage, and especially open air treatment, are additional measures which should be used in this condition.

### **Scurvy**

It is now generally agreed that scurvy is most frequently produced by exclusive feeding of an infant on commercial "baby foods."

Scurvy may also result from the long-continued exclusive use of sterilized milk or condensed milk.

The ordinary symptoms of scurvy are black and blue spots on the legs, swelling of the knees and ankles, soreness in the legs, purple color of the gums, pallor, loss of appetite, loss of weight, lassitude, and sometimes bleeding from the bowels, gums or nose.



Scurvy may be both cured and prevented by the use of purees of fresh fruits and orange juice, and securing free bowel movement. The regular use of Yogurt tablets is especially to be recommended in all cases when the infant is bottle-fed.

The existence of scurvy always indicates the necessity for a radical change of diet.

### **Rickets**

This disease is due to a disturbance in the nutrition of the bones, in which the bones are softened and growth is arrested. There is also an atrophying of the muscles. The leading symptoms are: Body in general thin and delicate, flaccid skin, enlarged joints, narrow chest, pointed sternum, nodules at junction of ribs and cartilages, rickety rosary, prominent abdomen, enlarged liver and spleen, often slight fever, weakness of the legs, restlessness, soreness of the body, child cries when lifted, profuse sweating during sleep, large head, square forehead, teeth small and deformed, growth of teeth delayed, after the child walks bowing the legs, flesh pasty and flabby, abdomen enlarged, pot-bellied, con-

vulsions, peevishness. The symptoms when acute are generally called scurvy. It is highly important that this disease should be recognized early. For this reason the symptoms have been given above with considerable detail.

The symptoms of rickets always indicate something wrong with the feeding and nutrition of the child. The symptoms are indicative of chronic poisoning and malnutrition, the cause of which is probably infection of the intestine with germs which produce putrefaction. This disease occurs most often in children fed on condensed milk and "baby foods." Lions' cubs in the London Zoo fed on meat died with rickets. The change of diet which added lime to the food made possible the raising of the cubs the first time. The careful observation of the rules for feeding and general care of infants given in this booklet will prevent rickets and will cure the disease when it has made its appearance. Constipation, which generally exists, must be combated by the measures already suggested for dealing with this condition.



### **Vomiting**

When a child vomits immediately after eating, the usual cause will be found to be either eating too fast or too much. When the vomiting occurs some time later, it is usually the result of indigestion. The most common cause of indigestion in children is too much fat in the food. In such cases the interval between the feeding should be lengthened and the food should be diluted by adding more water or barley water, and if necessary some of the fat should be removed by skimming the milk. If the child is nursing, one or two tablespoonfuls of barley water should be given just before nursing.

### **Colic**

A very common cause of colic is an excess of protein; that is, the milk contains too much casein. Some of the casein is not digested and remains in the colon in the form of curds where it undergoes putrefaction. Putrefaction produces constipation. When undigested foodstuffs are retained in the intestine through incomplete or infrequent bowel

movement, fermentation takes place with the formation of gas, and colic is the result.

Give a large hot enema, apply fomentations to the abdomen for ten or fifteen minutes. Repeat in an hour or two, if necessary. Employ suitable means to relieve constipation, so as to prevent a return of the difficulty. Para-lax is an excellent remedy for this purpose. One or two teaspoonfuls at night will almost certainly secure normal bowel movement and without the slightest injury. Para-lax is a simple, almost tasteless, remedy. When dissolved in water, it has the appearance of milk. It may be easily administered to the child in connection with its food or in water with a little Malt Sugar. A tablespoonful with an equal amount of water may be given at night by enema with excellent effect.

### **Convulsions**

Convulsions are generally the result of absorption of poisons from the intestines. They occur most frequently in connection with bowel disturbances or indigestion.

Convulsions are sometimes due to malaria

and other causes. If, after or during a convulsion, the face of the child is pale, the limbs cold, the lips blue, it should be put at once into a hot bath. The temperature of the bath should be 102 to 105 degrees. A warm enema should be administered as quickly as possible. If the bowels do not move rapidly, the enema should be repeated, adding two tablespoonfuls of molasses or of Malt Honey (Meltose) to a half pint of warm water.

### **A Foreign Body Swallowed**

If the child is a year and a half old, give as much potatoes as it can be made to eat. If the object is not so large as to produce obstruction of the throat and it has not entered the larynx, there is no occasion for worry, as it will readily pass through the intestines.

### **Foreign Bodies in the Eye and Ear**

In such cases a physician should be summoned at once, so that the foreign body may be removed as soon as possible. Serious injury may result from neglect.

## **Feeding During Second Year**



## Feeding During Second Year

THE appearance of the teeth indicates that the child is prepared to appropriate a greater variety of food. Fresh fruits, stewed fruits, purees of vegetables and cereal foods are suited to the child's wants and with milk and cream are capable of supplying all its nutritive needs. The best cereal preparations are Brown Rice Flakes, Toasted Wheat Flakes, Granose or Toasted Wheat Biscuit, Shredded Wheat Biscuit, wild rice, oatmeal and Cream of Wheat. Potato purees and other vegetable purees and purees of fresh or stewed fruit should also constitute a considerable part of the dietary. Malt Sugar should be used freely with cereals and fruits, but cane sugar should be avoided. It is an unwholesome sweet, even for adults in other than very small quantities, and often produces decidedly injurious and even poisonous effects in young children.

Children should be taught to drink fre-

quently. Three to six ounces of water should be given several times a day between meals.

Most of the various popular infant foods are objectionable, as their exclusive use leads to rickets and malnutrition.

Pastry, candies, ice cream, soda water drinks, and especially coca cola, and similar drinks, should be avoided by young children.

Tea, coffee, and chocolate and coca cola are poisons which are productive of great harm. A cup of coffee contains twice as much uric acid as does the same amount of urine. These harmful drugs should never be given to children at any age.

Children should be taught from the first to masticate their food thoroughly. This is highly important, as the habit of mastication formed in childhood is likely to be maintained throughout life.

Regularity of meals is also highly important. Upon regularity of meals depends regularity of bowel action. Food is the natural laxative. When food is taken between meals or at irregular intervals, digestion becomes disturbed, normal bowel action is interrupted, and numerous evils result. It

is especially important to avoid taking food at too frequent intervals. When food is received into a stomach which contains undigested food, serious indigestion is certain to result.

Children should never be allowed to eat heartily just before going to sleep. For the last meal some light food, such as rice or some other cereal with stewed fruit and Malt Sugar, may be used; but pies, cakes, bread and butter and other foods which require several hours for their digestion should never be allowed at the last meal of the day.

When a child has no appetite, it should not be urged to eat, but should be given water, and care should be taken to thoroughly evacuate the bowels by the use of enemas and if necessary by the use of some simple laxative such as Para-lax. In such cases it is well to give fresh fruit juices, either with or without Malt Sugar. Fruit juice contains a large amount of nutrient material ready for immediate absorption. It does not tax the digestive organs and is refreshing, sustaining, and helps to correct the conditions of the stomach and intestines which give rise to loss of appe-



tite. A fruit diet for a day or two is an excellent remedy for loss of appetite.

Constipation is the most common cause of loss of appetite. The best remedy aside from diet, is Para-lax. One or two teaspoonfuls night and morning in sweetened water will rarely fail to secure free bowel movements. Two or three tablespoonfuls of Para-lax with twice as much warm water may be introduced by enema at night to be retained. This is preferable to the oil enema frequently prescribed and often of service but likely to produce loss of appetite and "biliousness" through the excessive amount of fat. Para-lax is not a fat and is not absorbed; it is simply a lubricant.

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Every mother is invited to become a member of the Health and Efficiency League of America, an organization which has for its purpose the promotion of health, long life and efficiency. Membership in the League will keep one in constant touch with all advances made in the science of right living and entitles a person to receive answers to any

inquiries which may be made on questions concerning matters pertaining to health.

The publishers will be glad to give information concerning health literature, schools of health, health lectures, health foods, and the special preparations and appliances referred to in the foregoing pages.