Notes on the Nutrition and Health Management of Young Children

A Thesis

For the degree of M.D.

by

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Although much has been said and written on this subject by able and experienced physicians, yet, when we take into consideration its extreme importance, it is remarkable to notice on the one hand, the insufficiency of knowledge displayed by mothers, nurses and those that have the care of young children, and on the other, the two often inadequate attention bestowed upon it by many medical men and especially general practitioners who in the course of their daily work have young children brought constantly under their observation and are enabled to watch the physical development of individuals from the moment of their birth until they pass out of childhood into puberty.

When we reflect that it depends to a great extent on the kind of diet and its regulation, the manner of clothing, and enforced habits of life during the early months, not only whether the child will survive the critical period of infancy, but also whether it will arrive at puberty, both a sound constitution and vigorous brain, able to take its place in the struggle of life and battle with its difficulties; or whether, perhaps crippled in limb, stunted in stature, already a victim to dyspepsia and its attendant train of disorders, or with more or less impairment of function of one or other organ, it grows up to take a feeble and incompetent part in life's toil; and unfit to perpetuate its kind without deterioration of the race, it is impossible to exaggerate the overwhelming responsibility devolving not only on parents but still more on physicians in their treatment of infants and young children.

I could not presume, in the face of the numerous excellent treatises on this subject or relying on my insufficient experience.
to enter upon a systematic scheme of the nutrition and health management of young children, but would only venture to offer a few hints or suggestions with regard to points which have come under my notice or have occurred to me in the routine of practice.

Turning our attention first of all to the Nutrition of Infants, it will be convenient to divide the life of the infant into two periods.

1. From birth to the commencement of dentition.
2. From dentition to the end of the second year.

also touching upon nursery dentition after the second year.

First then, the period from birth to the commencement of dentition, and that we may be the better able to determine what form of nutrient is best suited for the infant, let us examine the alimentary tract as we find it at that period.

The mouth contains no teeth, the muscles of mastication are weak and undeveloped, the lower jaw is feeble and projects before the upper jaw and its joints are imperfect; the secretion of saliva is scanty, while the mucous secretion is in process; the hard palate is not grooved deeply as are the structures of the mouth, the tongue and lips alone are well developed. Thus we see that the mouth is obviously a mere suction apparatus, no chewing or being involved, and saliva is not secreted in sufficient quantity to act on solid food. From the imperfect development of the structures of the mouth and cheeks, particle of solid food, if given, would be liable to lodge in corners and ferment, hence the frequent occurrence of stomatitis. The mouth then is clearly intended by nature for the reception of liquid food only. The stomach lies perpendicular, with scarcely a marked fundus, and its great curvature is undeveloped; its capacity is small and its muscular coat weak. While the mucous membrane is smooth without Virchow, it is in fact a mere continuation of the alimentary canal. Food is not intended to remain long in it and from its position, form and the insufficiency of its cardiac end, regurgitation readily occurs.
And vomiting is therefore common during this period. Passing onto the intestinal canal, we find that until dentition, the intestine does not increase in length, the caecum is immature and the whole tract is carnivorous in character and unsuited for vegetable food.

The muscular coat of the intestine being weak, favours the formation of gas and, giving rise to the distended belly of infants, so often seen. The glands of the intestine are imperfect and therefore the food taken should be capable of rapid absorption. The liver and gall-bladder remain almost stationary in development from birth to dentition, than the motions of infants are pale & frequent. The pancreas is small and the secretion almostnil.

The conclusions derived from these considerations are that only liquid food should be given, this food must be animal and not readily fermentable, it must also be capable of quick digestion in the stomach, easy absorption in, and rapid passage from, the intestine. Milk is the only food which fulfils all these conditions, and yet in spite of this, how often do we see the infant-eaten during the first day after its birth fed with gruel, bread & butter, cornflour, cornflour & food which it is utterly unable to digest, which cannot nourish and can only injure it! Even when the mother has a plentiful supply of good milk, nurses are apt to offer other food to the child, thinking that because the infant appears hungry, and takes it readily, it must be the right thing for it. This is of course chiefly seen among the lower classes of society, but in that account the evil must not be disregarded.

Secondly, from dentition to the end of the second year.

This period is one of very gradual development, there is no sudden change. The teeth appear slowly in succession, the salivary secretion increases in amount; the muscles of the oesophagus gain power, the hard palate becomes followed, the mouth and its structure gradually assume the adult form. In the stomach, the development of the pyloric goes on till the end of the second year and so vomiting is still frequent when the stomach is full. The intestine increases in length, and the caecum acquire its adult shape and functions, the muscular gut becomes.
becomes stronger and so that in less tendency to gas formation and collection. The balance of pancreatic secretions also becomes more and more fully established. Thus the whole alimentary tract step by step paces its full development during this period.

At this change takes place slowly, and therefore its alimentary canal will not bear any sudden change in diet. If it is treated as the alimentary tract of an adult, gastric and intestinal trouble readily occur and in fact frequently happen, but are always referred to denudation, whereas denudation is not the cause but only one part in a series of changes, the real cause being the abrupt change to solid food, too varied in character and incapable of digestion by organs which are in a transitional stage, and have not yet arrived at their adult condition.

During this period, milk is the only suitable food, and the best form of milk is of course the milk of the mother. Then, let both be the fact that, among children fed artificially, the mortality is 30 per cent during the first year of life, and that of the 20 per cent which survive many are mentally or otherwise diseased. How reprehensible it is the conduct of those mothers who, with a plentiful supply of milk over which their infant depends often for life and certainly for health, from some moral reason, often, from some silent encouragement by the medical man, will not give their infants.

I am obviously only speaking of cases where mother and child are strong and healthy, and the supply of milk abundant and of good quality.

In many instances, the mother is an unfit one for her child, and the following are some of the contraindications to nursing:

- Epilepsy
- Tuberculosis
- Stroke
- Hysteria
- Some forms of rheumatic disease
- Arteriosclerosis
- Chronic Phthisis
- Quinsy

And indeed, in many conditions, which deteriorate the quality and quantity of the milk and render the mother incapable of the maternal resources, we regard syphilis, so we should naturally regard it as a contraindication, but unless the cachexia is violent and profound, it is better for the mother herself at any rate partially, as a witness in undeniable, and the mortality of syphilitic infants fed artificially is especially great.

Many of the mother has also been considered before her eighteenth year a woman.
in not a suitable nurse, and the menopause approaches she also become
unfit for the duty. If pronounced to be a contraindication, it is not advisable for
the infant to nurse, and, as it sometimes the case, the infant does not thrive in
spite of both mother and father being healthy and the supply of milk appar-
tently all that can be desired, then, if possible, a wetnurse should be obtained.
In the country, the value of wetnursing is, I fear, not sufficiently appreciated.
In the exception and not the rule to seek for a foster-mother when the natural
mother is incapable of fulfilling her duties. If not only medical men, but also
the last, at large, recognized fully the importance of, I might say, the
necessity of according artificial feeding of infants until dentition or more
early, the developmental period is safely passed, and the increasing benefit
accruing, by a strict adherence to a natural system of nourishment, not only
directly to the infant, but, through it, not too much to say, indirectly to
the community, in so far that hereditary decline would become less
frequent, matured on account of the obstacles offered to its development.
Infantile mortality lessened, and the hygiene status of the nation improved,
we should find that wetnursing would become the only alternative and
artificial food chiefly resorted to when both mother and foster-mother failed
the means of gaining this end, and would be, that the physicians should universally
value a thorough and searching examination of the candidate for the office
of wetnurse and their help to remove the very natural hesitation of mothers in
entrusting the life of their child to one who might be the means of communicat-
ing permanent ill health to a previously sound constitution.
The examination of the wetnurse should then be thorough, and it should also
be systematic. Beginning with the skin, the physician should look carefully
for traces of tuberculous disease as scabies, psoriasis, eczema, caused by
scabies, or syphilitic disease especially in the groin or ancles and
any suspicious appearance on the palms of the hand, and soles of the feet.
Then the head demands inspection for parasites, crabs, or scales or falling
out of the hair. The state of the mucous membrane of the mouth, gums, tongue
pharynx, and nose should be noted and the glands and abscesses
also require attention. In every case it is important to see how and
accurately the chest so as to ascertain the presence or absence of lung disease
especially phthisis, and cardiac disease. The liver and spleen are important
organs.
organs concerned in the blood system should not be passed over. In the case of the breasts, the nipple should be looked for, and to make the examination thorough, if there is any suspicion the sexual organs should be examined for cicatrices and other appearances of disease. Inquiry should be made as to the existence of any arrangement of the mammary function, and the physician should also be on his guard against the possibility of recent syphilitic infection or the existence of pregnancy. If there is any hesitation the nurse must be rejected. In all cases for this be a thorough examination of the breasts: there should be distended, not tense or pendulous, heavy but not fat, and the lacteal glands should be distinctly felt. A middle-sized breast with a network of veins over its surface is the best. The presence of nicotinism in the milk, indolent against the efficiency of the nurse. The nipples should be long, without crotches or excrescences, and the areola healthy.

If after the child has sucked a good stream of milk can be started, and comes readily, the breast is a good one, but if the milk is difficult to draw it is obviously unfit for a weak child. As regards the character and quality of the milk, many methods of analysis have been proposed, but a simple and trustworthy test and one always attainable is to obtain a drop of milk upon a surface of the thumb nail, if it keeps a globular droplet form and is of an opaque white color, it will generally be found to be of good quality. It is a necessary precaution always to inspect the infant of the nurse. As regards the age of the woman, from eighteen to twenty in the best age: she should not be with her first child but rather with her second or third. As long the history of the previous nursing can be inquired into: if however she has had more than four children, she is not so suitable. The age of the nurse’s child should correspond as closely as possible with that of the foster child: eight weeks difference is the most that can be allowed, for the amount of casein in the milk increases gradually after birth and at a late period than this would contain a quantity injurious to a very young infant.

It is most desirable that the nursing function should be carried on methodically: a nursing woman ought to give her whole attention to it and it would be well for the medical man to impress upon her the importance of so doing. Busy and quarrelsome mothers are bad nurses. The child.
The child should be nursed at definite periods, for the health and temper of both infant and nurse suffer if the nursing is carried on irregularly and the rest of both is disturbed. During the day, the infant should be breast-fed at regular times, and put to the breast but at night, though regularly is necessary, it is not desirable to awaken the child for food so often. A newly born infant requires to be nursed every hour and a half and should have intervals of three or four hours' sleep at night. After four weeks, it should be fed every two hours and at three months every three hours. The practice of some mothers of giving the child the breast when it cries, or when symptoms of discomfort cannot be too strongly condemned and also the habit of letting the child go to sleep at night with the nipple in its mouth. At each feeding time the infant may be allowed to suck the breast from empty, or until it has had enough. One breast only being used for one meal and the other for the next. By this, all the child obtains milk of the same quality at each meal and pendulous breasts are avoided.

And now let us turn our attention to the regulation of the life of the new mother or foster mother. Exercise in the fresh air twice or thrice daily, when possible, is most desirable and any light occupation or amusement may be allowed, while everything calculated to disturb the mental equilibrium is to be avoided. If the mind is troubled with anxiety about household care or the system excited by too much society, occasional changes of food, the milk is sure to deteriorate in quality and quantity and the infant both soon give indications of ill health: loss of weight or attachment of the stomach, that there is something amiss with its nourishment. In dealing with the mother no special diet is indicated: the ordinary diet should not be changed, and this especially applies to women—so far, as generally happens, the nurse is a country woman or of any rate of the poorer class and accustomed to plain simple food, the change to rich stimulating food is most prejudicial to her own health, and through her milk to the well-being of her charge. The food of the nurse then should be light, easy of digestion and properly cooked, rich in milk, stale bread, cheese, acids, oily fish, as salmon or other injurious. During the nursing.
A woman always drinks more than at other times, and the best form of drink for her is fresh milk. The tendency to take large quantities of alcohol, beer, or portwine is in the vast majority of cases to be strongly interdicted. Alcohol in one or other of its various forms may, for a time, stimulate the lacteal glands, and increase the supply of milk but reaction always follows and of continually induced and excelled by doses of stimulant - the function of the breast is destitute in the end, and the whole system unnaturally strained. Pure fresh milk is the best drink for a nursing mother and though, in a few cases, perhaps it may be found necessary to prescribe some form of stimulant, in any ordinary uncomplicated case no stimulant is required. Effervescent drink is highly charged with carbonic acid and seem to be prejudicial and are better avoided.

During the nursing months, various contingencies may arise, such as menstruation or pregnancy, and due attention must be paid to them. When menstruation begins, the quantity of water in the milk decreases and the solids, especially casein, are proportionately increased, and the child will be liable to attacks of dyspepsia, which pass off again when menstruation ceases. Generally, the nursing, if the menses appear at the fifth month of nursing, or later, it will not be necessary to change the nurse, but if it set in at the sixth or seventh week, the child should be carefully watched and if it does not continue to thrive or becomes seriously affected, some alteration in the food is indicated. If pregnancy occurs, nursing should invariably be discontinued.

Slight ailments of the nurse may be disregarded but the onset of any serious illness is a self evident sign that nursing should cease. In all cases whether the nurse herself becomes indisposed or whether she is apparently healthy and furnishing a good supply of milk, if it is noticed that the child does not thrive but becomes dyspeptic or loses weight severely, a change is desirable.

Disease of the breast, as purse, excoriations, or eczema of the nipple or areola, or galactostasis, require early and prompt treatment but do not come within the range of this paper.
As far as possible, let the breast afford the sole nourishment for the infant, and where the supply of milk is good in quality and quantity no other food need be given for nine months. But it is frequently necessary to supplement the natural diet, if the supply is not sufficient to maintain the child in a healthy condition, and I shall refer to the different kinds of food that may be given when I speak of artificial feeding.

It has been mentioned above that when infants have to depend solely on artificial nourishment, the mortality has been estimated to be very great, that nearly eighty per cent die in the first year of life, while of the twenty per cent that survive many will, on careful inspection, be found to exhibit some traces of the results of a defective nutrition, such as sickness of a greater or less degree and but few grow up with healthy bodies and minds. If then, we keep this constantly before our minds, we shall be more impressed with the importance of studying the question of artificial feeding, of seeking to improve upon the various kinds of food which are at present in use and of doing all in our power to reduce the mortality so serious to the community and so dear to the profession.

As far as we know at present, milk, in some form, is the best artificial food for young infants. Aows milk and goat's milk approach most nearly in composition to human milk, but as one they can only be obtained with difficulty and are not within the reach of all classes. Cow's milk comes next in its scale and is generally available. It has however certain disadvantages. The proportion of curcin contained in it is large, and it curdles in large flakes in the stomach, just as small flakes in human milk. It is also very liable to fermentation and contains relatively less sugar than human milk.

In selecting the cow from which the supply will be drawn, there are certain points worthy of attention. The cow should not have calved too recently nor on the other hand too long, as the composition of the milk varies with the time that has elapsed since calving. It is also well not to choose a cow with too abundant a supply of milk. When possible the cow should be milked for each meal of the child.
It is at present very difficult, nay almost impossible to obtain good milk, either in town or country, under the above conditions, but it is not too much to hope for, that we shall sooner or later have stations at which cows are kept for the purpose of supplying nurseries with good milk at reasonable rates. This is already done in Germany and in several towns there is an establishment where cows are kept solely to furnish nurseries, or invalids, with milk. The cows are kept scrupulously clean and are fed on a regulated quantity of dry food and are under medical supervision, and here I may refer to the great need that exists for the establishment of institutions from which wholesome milk may be obtained: there are, it is true, a few free and these but the supply remains far short of the demand.

In the early months the quantity of milk used for each meal requires special preparation. The milk should be heated to a point just below boiling point, one advantage of this procedure being that any possible septic infection is guarded against. The milk must not be skimmed before heating, and after heating, water should be added varying in amount with the age of the child. During the first month, the proportion should be two parts of water and one part of milk.

From the first to the second or third month, one part of water, and one part of milk.

From the second or third month to the fifth or sixth month, one part of water, and two parts of milk.

From the fifth or sixth month to the seventh or ninth month, one part of water, and three parts of milk.

This proportion of course only holds good if the milk is of good quality, if poor and the child does not thrive less water must be added.

After the ninth month, pure cow's milk may be given.

As regards the addition of sugar, generally too much is added with the result of digestive disturbances being set up. About two or three teaspoonfuls of a one per cent. solution of sugar of milk, is sufficient to add to each bottle of milk, and it is useful in...
In all cases, to add a small quantity of soda: a teaspoonful of a one per cent solution of bichromate of soda is enough for each feeding bottle of milk and water.

The amount to be given the child at each meal will naturally vary with the age and size of the child. About from two to three cc. are ample for one meal and this quantity should be gradually increased as the child grows older. The meal time may be the same as mentioned above for breast children.

The form of feeding bottle is most important, it should be as simple as possible, avoiding all tube, and complications, which are a constant source of trouble from the difficulty experienced in keeping them sweet and clean and preventing burn and mouth to do so. With the greatest care particles of fermenting milk will remain lodged somewhere in the apparatus and infect the whole bottle. The best form is the old fashioned oval flat bottle of white glass with two apertures, one near one of the flat surfaces to admit of the introduction of milk, and also to allow thorough cleansing; this aperture should be kept open or closed with a perforated cork which should be as solid as possible and honeycombed as many corks are and admitting of the lodgement of particles of fermented milk. After each meal the cork should be well washed and between meals kept in some harmless antiseptic solution, as a weak solution of salicylate of soda to insure perfect cleanliness. The other opening in the bottle is at one end which is adapted so as to allows the nipple to be forced directly to it without the intervention of a tube. The best kind of nipple is one made of decalcified ivory, this is tasteless, odourless and becomes soft and flexible in the mouth of the infant, thus resembling the natural nipple: it is also more easily cleansed than the nipples commonly used. If pork cows milk does not agree, condensed or skim milk may be used; it has the disadvantage of containing too much sugar and must not therefore be used too concentrated as it is apt to give rise to constipation, colic or to the development of bowel, but it does not curdle in such large slices as cows milk and is useful.
Useful in summer in large bowls, while many children thrive on it as their sole food and on long journeys by rail or water when fresh milk cannot be obtained it is very convenient. In older children with chronic disorders of the intestine it can often be found beneficial as a change. It should be mixed with water in the following proportions:

From the first to the third or fourth week, one part of milk to fifteen parts of water.
From the third or fourth week to the second or third month, one part of milk to fourteen parts of water.
From the second or third month to the sixth month, one part of milk to twelve or thirteen of water.
From the sixth to the twelfth month, one part of milk to ten parts of water.

There is also a form of Condensed Swiss milk, prepared without sugar, and a liquid form of milk to be used as fresh cows' milk, which is prepared in Austria. While in this country we have the artificial human milk prepared by the Aylesbury Dairy Company, which is said by many observers to be one a valuable substitute, but I have had no experience of these myself with the exception of the Austrian preparations which seems to agree well with infants.

The various milk substitutes now claim attention, their name is legion and their number is added to yearly. The food known as Lectery's food was one of the first malted preparations brought forward and is very useful. Its following modifications may be one:

Dissolve half a drachm of malt in six ounces of water; to a fourth part of this solution add a tablespoonful of powdered malt, stir well and let it stand for half an hour. Take now five ounces of milk and a tablespoonful of flour and make a good browning it up to the boiling point. Add to this the malt solution stirring it well and then heat slowly but not to boiling and strain. This food contains gluten, sugar and milk, and is useful as an adjunct to breast feeding or as the sole food. In dyspepsia and chronic disorders
of the intestines; it is also to be recommended. When given as the sole
rejuvenation it requires to be mixed with water, as follows:
From the first to the third week, two parts of water to one of cow’s milk.
From the third week to the second month, one part of water to one of the milk.
After the second month it may be given without water. Water should also
be given to the child before, as this food creates thirst.
Among the many kinds of patent Infant foods I have found Sawyer
and Moore’s food for Infants, very valuable, and when no other kind
of food was given, I have seen infants take it readily, without effort.
Nowhere is the fact that cows’ milk contains a large proportion of
Casein and that Casein is digested more easily if fatty milks of some
kind is taken with it, cream may be added to milk, in amount
proportionate to the age of the child. Beginning with five ounces
of cream to two ounces of milk, and twelve ounces of water, and
increasing the amount of milk, as the child gets older.
Sometimes when cows’ milk alone does not agree with the infant, a small
quantity of well boiled four oatmeal gruel added to the milk, is well
digested and absorbed by decrystallizing the curd, in making the milk, more
digestible, while it is in itself nutritious.
Besides the different forms of milk and flour foods, broth made with
beef will often be found a useful addition to the diet; especially, if there
is any tendency to arthritis or where the child is anemic, as it
contains albumen, and a varying proportion of earthly salts. It may be given,
mixed with milk.
During the first to the third month, two parts of broth to one part of milk.
From the third to the fourth month, equal parts of milk and broth.
From the fourth to the fifth month, one part of broth to two of milk.
From the fifth to the twelfth month, one part of broth to three of milk.
Bread food and Grains a broken food should almost be given before
weaning.
During the first year, or at any rate during the period comprised between
breast and dentition, or more accurately, the commencement of
prosperous states of health, in the alimentary tract and the organs
connected with it, which take place toward the seventh month beyond

if the infant in being fed partially or wholly on artificial food, it is very desirable to watch the child closely, so as to be able to detect at its outset any step in its downward direction. In infant, changes, for worse or better, take place very rapidly, and if Mother Nature or physician suffer the attention to slacken, or are not trained to attach sufficient importance to slight symptoms, much valuable time may be lost before the danger is recognized. Good means can be taken to avoid disaster.

An infant can tell us nothing of its feelings, or of its love and detest, we have to judge entirely by objective signs and symptoms, and be able to interpret these signs in half the battle.

The cool scalp, with the brain palpable, regularly in the fontanelle, the bright eye, clear firm and elastic skin, the moist red lips, clear, happy temper, placid sleep, keen relish of food and evident enjoyment of life, where a healthy infant exhibit, are satisfactory evidences that progress is being made at all going well; but, on the other hand, when we notice that the skin feels hot and that, the fontanelle is abnormally prominent or depressed, when we see that the child is fretful and evidently its at rest, when it sleeps fitfully and irregularly, often starting or waking, bleaching the face or drawing up the knees against the abdomen; when the appetite is capricious, when we observe that the motions lose their natural character and become too frequent or too seldom, that they are often offensive or distended and accompanied with the passage of a considerable quantity of wind, then it is evident from these and numerous other symptoms that something is out of gear, and the root of the evil is the great majority of cases will be found to be the food.

One most valuable means of judging whether the child is thriving, of course in conjunction with other methods of observation, but which, as far as I can judge, is not sufficiently recognized and taken advantage of, is to weigh the infant regularly. This may be done once a week, once a fortnight or once a month, according to the condition and age of the child, but during the first six months, it is advisable to weigh every week. When the child is fed entirely on artificial food and it will be found a great aid in the recognition and treatment.
Treatment of infantile ailments. To give as far as possible accurate results, the child should be weighed at the same time every week, and the stomach, bowels, & bladder should be empty, but this is difficult to manage; the child should always be weighed naked.

At birth a healthy infant should, on an average, weigh between seven and eight pounds, many infants weigh a great deal more and many less, but seven pounds may be taken as the average.

In children fed entirely at the breast, weight is lost during the first four days to the extent of half a pound, but when children are fed artificially the loss of weight often goes on to the sixth or seventh day, even when the child is thriving, then the weight begins to increase and in somewhat the following ratios:

Starting with the weight of seven pounds at birth.

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<tr>
<th>Month</th>
<th>Daily Increase</th>
<th>Monthly Increase</th>
<th>Initial Weight</th>
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<tr>
<td>1st</td>
<td>13½ ounces</td>
<td>1 lb. 9 ounces</td>
<td>8 lb. 9 ounces</td>
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<tr>
<td>2nd</td>
<td>12½ &quot;</td>
<td>1 &quot; 8½ &quot;</td>
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<td>3rd</td>
<td>12 &quot;</td>
<td>1 &quot; 6 &quot;</td>
<td>11 &quot; 7½ &quot;</td>
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<tr>
<td>4th</td>
<td>11 &quot;</td>
<td>1 &quot; 4½ &quot;</td>
<td>12 &quot; 12½ &quot;</td>
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<td>5th</td>
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<td>6th</td>
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<td>11th</td>
<td>3½ &quot;</td>
<td>6½ &quot;</td>
<td>18 &quot; 10 &quot;</td>
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Many children will of course increase more rapidly in weight and be much heavier at the end of each week and month than the table shows, but if the weight falls below that indicated in the table or below the corresponding ratio or does not increase at the same rate, then we must be on our guard and endeavor to detect the cause of the loss in weight.
Having thus touched briefly upon some points connected with the nutrition of infants during the first few months after birth, let us consider next the question of weaning. The weaning period is in reality a most important crisis in the life of an infant. If begun too early or put off too long, if the change of diet is made suddenly and completely, and the child is at once cut off from its former food, the most disastrous results may follow. The time at which weaning should begin is during that transitional stage in which the organs of alimentation are busy in adapting themselves for the reception and digestion of a different form of diet, and therefore by inaction or neglect may have their equilibrium easily disturbed. We must also remember that for the next few months onward the alimentary organs are changing into and gradually arriving at that state of development, which, when once reached, will not undergo much change during the most important years of the life of the individual, and therefore as it depends upon those who have the charge of infants to a great extent whether the children will or will not be fairly started in life with healthy and strong organs, how careful should they be in selecting the material which is to influence the health of the child for good or for evil in future years, and in adapting the different means of nutrition at their disposal so that the infant may be given every chance of building up the foundations of a vigorous mental and bodily frame. Inherited disease and bad habits of life may in the early or later years of adult life militate against the desired result, but that should be no hindrance to deter us, while we have the power, from doing our part, which is manifestly a duty imposed upon us, towards the improvement of the individual and indirectly of the nation.

The period at which we should begin to remove the infant from the breast and accustom it bit by bit to other nourishment varies with the condition of both mother and child. But taking for granted that we are dealing with a healthy infant, which has been fed entirely at the breast and which has already four teeth, the most suitable time to commence is about the middle of the ninth month.

The prolongation of the nursing period beyond the twelfth month, far into the second year, or even, as we sometimes see, after the child is two
years old, is a practice strongly to be deprecated. The continued strain on
the maternal system after the natural weaning period, when her reproductive
organs have recovered from the functional changes and are again assuming
their usual function, is the cause of grave impoverishment of the blood
and consequent deterioration of tissue. The child also is affected by
any change in the maternal system and suffers proportionately, and even
if both remain apparently well, on careful observation the child will be
found to become pale and fat without the natural development of
muscle and bone.

And here arises the question as to the effect of lactation on menstruation.
There is a strong, belief prevalent, especially among the lower classes, that
menstruation and conception cannot occur so long as the child is kept
at the breast, and many mothers acting on this conviction and considering
only themselves, and not the welfare of their children, continue suckling
far into the second year with the hope of avoiding pregnancy.

Though the question cannot be said to be decided, it is probable that
ovulation, menstruation, or conception may occur at any date after
the ninth or tenth month subsequent to the birth of a child, and
that continued suckling will not prevent their appearance.

The process of weaning must be gradual, it may with benefit be
extended over a period of eight weeks, at the end of which time
suckling will be quite discontinued.

At the tenth month the infant should be tainting the breast about six
times in the twenty-four hours; we begin by giving one cup of
milk, or broth instead of the breast, so that the infant takes the breast
four times, a milk, or broth, once in the twenty-four hours. The milk
should be pure milk, of the best quality, that can be obtained. The broth
at first is preferably made from beef as I have mentioned above: it
should be made as beef tea is usually prepared — taking about a
quarter of a pound of lean beef, cut it up into large pieces and place
it with about two tablespoonsful of cold water in a covered jar; this jar
is then to be simmered for two thirds of its depth in a pan of boiling
water, or placed in a moderately hot oven; in the course of an hour
the juice is to be strained away from the meat and diluted with water.
as required. The milk or broth may be given through a feeding bottle, but better with a teaspoon. The child must be watched closely to make sure the effect of the change of diet; and if we observe evident signs that the food is disagreeing we must endeavour to find out the cause. Perhaps the milk or broth have not been sufficiently diluted or the child may not agree and then mutton, chicken, or beef demand a trial at the end of a week, if all is going well, one meal of milk and one meal of broth may be given and the breast four times in the twenty-four hours. During the next week, two meals of milk, one of broth, and so on till the breast is gradually discontinued. At the end of two months suckling should cease entirely and the child depend solely on artificial food for nourishment. If during weaning, especially during the first week, vomiting or dyspepsia set in, the child should be again put to the breast alone. Constipation is often met with during weaning and may if neglected lead to catarrh of the large intestine; it should therefore be taken in hand early. If possible no medicated lanolin should be given, it often suffices to add more water to the milk or a little bicarbonate of soda or to increase the amount of salt in the broth. Sometimes one or other of the milked foods will bring about the desired result. Deafness on the other hand may be checked by cocoa or malted food or by adding lime water to the milk. Or in either case no time must be lost or active measures delayed, as continued irritation of the alimentary tract may soon lead to disease which is beyond our power to control.

And now let us pass over shortly the various forms of food which may or may not be good during weaning or sometimes of necessity earlier, and then gradually draw our attention to the eating of children during the first few years of life.

Milk has arisen from the too early and indiscriminate use of heavy digestible food, than from any other form of diet. I think it is not too much to say that, if the starches foods were kept out of the reach of mother and nurses attending young infants, the infantile mortality during the first year would considerably or at least considerably
diminish. I am speaking of home-made unmixed with malt, such as we find commonly being given to young infants.

During the first four months, if the child has of necessity, to depend on artificial food, every other form of diet should first be tried and amylase absolutely excluded.

Now that we have so many good malted foods, the case is somewhat different, and these may be given earlier through not as the sole food, but pure staring food such as arrowroot, cornflour etc should be avoided if possible till after the fourth month. Bread food in any frequently used by the lower classes and should at the root of many an attack of dyspepsia, it should be struck off the list of permissible foods.

A prickly or chronic intestinal catarrh, leguminous food is often useful quite once or twice daily, in milk, or broth, but it is well not to give it before the sixth month.

The various kinds of Mexican monster are not suitable as a sole diet, but may be crumbled into broth or gruel, after the sixth month in artificially fed infants. Flakes bruised in the oven, the it is of a flour, colour and the starch particles are broken up, is also at this period often well borne by children, given in milk, or broth.

Oatmeal porridge is in a most excellent food, provided that its use is properly regulated, but in its usual form it is not a suitable article of diet during the first three months. After the fifth or sixth month it may be given to artificiaily fed children when prepared as follows. If we take porridge made in the usual way from coarse oatmeal boiled till it is thoroughly soft, in water, with a little salt and rub this through, a hair sieve, we obtain a smooth gruel which may be diluted with milk and water for young infants, but at the end of the first year may be given alone or with milk, at one or more meals daily. It is an excellent plan to add to the oatmeal gruel either some finely powdered malt or a little of one of the malt-extracts, and then we obtain a food which can be digested by young infants, and which is useful in prickly, at any rate age.

The reason for straining the porridge before giving it to infants, is that...
that the large grains may be removed, which might, otherwise, set up irritation of the stomach or bowels. Children of fourteen or fifteen months, however, can take the porridge as trained. But it must always be so thoroughly boiled that each grain is smooth and soft; it should be eaten with cold unskimmed milk and, if not boiled with sufficient salt, with salt; sugar is an unnecessary adjunct and is more hurtful than otherwise.

The value of boiled porridge as a food for children of all ages is not sufficiently widely recognised in England and especially where it would be most useful, namely, in the home of the poor. It is a moderately cheap, easily prepared and, eaten with milk, contains all that is necessary for nutrition and in fact forms a complete diet in itself. I need not mention that it is a valuable food for adults, but from its containing a considerable proportion of bone forming nutrient it is especially so as food for children. It should have a place in every nursery and be the chief ingredient in at least one meal daily.

Eggs form an excellent addition to the diet of children, but should be avoided during the first six months at least. They should never be given hard-boiled and are best given in milk puddings or in broth. The end of the first year is early enough to begin their use.

As regards meat and meat broth, if the infant is at the breast and thriving, milk should be given before weaning.

In cases of rickets, chronic eczema, or where there is much anaemia broth is often of service about the end of the fourth month; beef broth, quite at first, once daily, after the lapse of a month twice, and at the end of another month three times.

Meat should never be given to healthy infants, but at the eighth or ninth month, or even earlier, raw meat-pounded to a pulp with a little salt and given at first at the rate of one teaspoonful daily, increasing to two or less teaspoonfuls if the motion shows that it is being well digested, is often of great value in anaemic rickety children, in cases of chronic catarrh of the stomach and intestine.
In children that have been fed at the breast and weaned at the ninth month, gruel with vegetables or bread may be given at the beginning of the second year. Cooked meat should be given, but sparingly to young children. The middle of the second year is quite early enough, and then it should only be given once daily, a little boiled mutton or chicken, or underdone beef minced finely or minced with gravy and vegetables. Meat has always the tendency to irritate young children and make them restless and excitable, sleepless and feverish at night. During its use the urine often becomes dark and concentrated, highly acid and irritating, so that the child has pain on micturition and often retains its urine on the account. Bleeding from the Redness has been set up by a great diet, nocturnal incontinence of urine, if not cured, is certainly favoured by it and melena may also be traced to the same source in female children. Let meat thus be avoided during the first year at least in the case of healthy children, and do not begin gradually later.

Though fish is often given, I believe that fish may be taken earlier than meat by children, and after the first eighteen months at any rate may with benefit have its place in the nursery menue, proving a light refreshing diet for children. Salmon, mackerel and oily fish, generally, together with shellfish and crustacea, are better excluded but white fish, as haddock, sole, whiting, turbot and brook boiled slowly, or with vegetables, in any, the diet and be a valuable addition to the list of foods. It may not be out of place to mention that fish requires to be cooked carefully, in the same way as eggs, if boiled too long it is converted into a hard indigestible mass of tough flakes, but cooked just enough to coagulate the albumen it becomes light and tender and easy of digestion. The presence of phosphorus in the flesh of fish, although minute
in quantity may have its effect in building up healthy brains and nerves television in the child as well as bone.

Although meat is not to be recommended for young children, soups and broths may be given during weaning; at first they should be plain, but later on may be varied by adding bran, flour, sugar, rice or oatmeal, in each case cooking thoroughly. Vegetable soups should not be forgotten, both as being nutritious and as affording a change of diet. Almost any fresh vegetable is available, except perhaps some forms of cabbage, we may use potatoes, carrots, turnips, parsnips, peas, beans, leeks and onions and other. Whichever vegetable are chosen, they should be cut into dice and boiled from one hour to one hour and a half with a little salt. When cooked, the vegetables, of which scarcely more than the fibrous and cellular portions now remain, are strained off with a fine sieve and the broths, which contain the soluble parts of the sugar, albumen and leucin of the different vegetables, may be added to meat broth, rendering them more nutritious and less stimulating. Children will rarely take vegetables as presented to them, in the ordinary way, simply boiled and generally, improperly cooked and uninviting; and even if, by a tedious process of weaning, they are cut off from one useful source of nourishment, but if we extract the soluble nourishment from vegetables and desiccate it somewhat by adding meat broth, children will take it readily. Older children should always be induced to eat vegetables, and not to eat so freely of meat as we frequently see. The cooking in very general practice, indeed in few households, are, vegetable, well prepared and given their proper place at the dinner table. Tea and coffee are certainly injurious to young children, and should never be given to them. Cocoa on the other hand is admirable as a food, but not indiscriminately. Before the third month, milk and deep preparations often result from it are, but during weaning it may be given, well diluted with milk, once daily, and during the second year more frequently, but always in milk. Medicinally it is useful in some cases, but children who suffer from deep preparations and have thin, unhealthy motions are often relieved by taking cocoa once or twice
twice daily in milk. Also from the ninth month to the end of the second year it will be found beneficial in diarrhoea and dyspepsia, especially where milk alone appears to be ill borne.

At the end of the second year, the diet may gradually be brought to approximate that of adults, but it is better still to keep to the simplest and least stimulating foods. Milk should remain for several years the chief source of nourishment; either pure or in bread, milk, or with oatmeal porridge, or in the different kinds of milk pudding. Meat once daily is sufficiently. Vegetables, on the other hand, as remained above, may be always given, once or twice a day with advantage. The diet is high vegetable, and also in the fat of meat which we observe to often in children, in more oven, it has managed than to read occasion on the part of the child, and not infrequently, this design to certain articles of diet last on into adult life chiefly. Avoid the injudicious giving way to children’s inclinations.

Without advocating vegetarian principles, we con with caution give a more important position to vegetable on our diet list, and expend more care on their preparation both plainly in made dishes. The amount of nourishment to be obtained is considerable and less stimulating, and though meat in by no means to be excluded to a most valuable form of diet in the nursery, let us see vegetable better prepared and in greater variety, forming a large share of one or more meals daily.

Fruit has a great deal laid to its charge especially in summer as a source of infantile disorder but it is with the injudicious use of over- or under-ripe fruit that does the mischief. preserves also delectable from careless manufacture have fermented or moulded in helping may cause digestive trouble. But ripe fruit either raw or in compote, stew, puddings or preserves, has an inconsiderable worth in an auxiliary diet. We must of course regulate its use both in amount and frequency but given with milk or light sweet puddings it will be readily and beneficially taken by children. As a rule it is safer always to have fruit cooked before giving it to children, but all stone fruit should be free from stone, children being
Vegetable soups are, and although in most cases not harmful, the latter being prepared at stoat, yet there is a possibility of danger from lodgement of the foreign body somewhere in the intestinal tract from irritation set up by its presence. Breadfruit, such as currants, dates, and very frequently, but thoroughly, cooked in sausages and puddings, and in this way may be injurious. I need hardly say that highly seasoned dishes, condiments, or spices, rich puddings made with wine or brandy, in fact any stimulating or mixed form of food are not to be admitted at the nursery table. Let the diet be as simple as possible, each dish well cooked but plain and un-seasoned: there is enough material at our disposal to give abundant and appetizing variety, all that is required is good management and the expenditure of some care and skill, which in such a matter as the nourishing of children, so as to bring them up, as far as lies in our power, with well-developed healthy bodies, is surely well expended. The mother should be satisfied with leaving the preparation of her children's meals to the nurse or cook, who in their turn may also delegate it to a subordinate, but it should be her daily duty, personally to superintend the arrangement and cooking of the food for the nursery. It may be said, often with truth, that a young mother knows even less than her servants how to cook, but now that we have in so many towns excellent lectures on the preparation of food open alike to rich and poor and in some places even special classes for older children, there will soon be no excuse for the badly cooned and consequently indigestible masses which we see now placed on the table in many houses and cottages.

As regards beverages, for children, cocoa and milk have been mentioned, tea and coffee are not fermentable as also wine, spirit, and malt-liquors. It is questionable whether as a tonic nourishment stimulant, may or may not be given in small quantity medicinally to children in certain cases. I am inclined to believe that in anaemia, badly nourished children, in some cases of rickets, and chronic hydrocephalus, and chronic cutaneous disease, depending
on an impoverished condition of the system, and also in convalescence from long, debilitating illnesses, or as a late resource in acute illness, stimulants are often of great help toward recovery, even in very young infants. During acute illness, good brandy in small doses, regulated by the daily condition of the patient is the most reliable form, while in convalescence or chronic ailments, malt liquors such as a pure light and mellow bitter, table beer will be found the best. Kind of stimulant as containing little alcohol but tonic and nutritive properties. So little dependence can be placed on their genuineness of wine, that it is better not to give them.

In all cases in which stimulant of any kind is given to children, it should be a stringent rule that the amount administered, and the length of time for which it is given, be entirely regulated by the physician and always discontinued at his order. Unless he can be sure of strict compliance with his instructions, the medical man should be very wary lest he introduce into the nursery as a remedy, what may be converted by injudicious use or careless habits into a subtle and very dangerous enemy.

Having briefly touched upon different points which attention may be directed to in the nutrition of children, during the early months, it will not be out of place to note a few of the mischiefious results which are liable to follow if sufficient care and judgement are not exercised in this, to many seeming trivial matter. Of these I would only mention:

1. Flatulent colic - dyspepsia, and disorder of the intestinal tract.
2. Flatulent colic is in reality only a symptom, but it is often a very alarming one, and may be considered separately, so that when referred to afterwards, the condition may be kept in mind. It is of frequent occurrence in young children, and is the chief cause of the large swollen abdomen seen in so many infants; the imperfect development of the muscles and absorptive ability of the intestines offering every facility for the formation and collection of gases. Thus it may be met with as a symptom of dyspepsia in cases where there is much pain and vomiting, and the motions consist of undigested particle of food; or it may indicate colic of the small intestines when...
When much fluid is passed before the motion, constipation, even of only twelve hours' duration, is another exciting cause. The presence of certain lumbricidea will also set up colic, especially when the worms have been irritated by sour fermenting food.

When an infant is suffering from flatulent colic, it gives evidence of being in great pain, the face becomes suffused, the child cries vigorously, and makes uneasy movements with its limbs: the knees are drawn up spasmodically against the belly, the feet are clenched and the elbows bent, and forced tightly against the side. When the spasm of pain come on. Residue movements may also be set up and even epileptiform attacks. The character of the motion varies, sometimes they are hard, at other times, soft. Whatever may be the cause of the colic, it is necessary at the time of the attack, to do something to relieve the suffering of the child. It sometimes suffices to remove the clothing from the abdomen, and turn the infant face downward and, with the palm of the hand, forcibly warmed, forced against the abdomen: held as for a few minutes, the pressure displaces the wind. And the wind, incident to the pain.

If this gives no relief, friction of the abdomen may be tried, but when the pain is entirely forgotten, a warm bath will often accomplish the desired result. It is not advisable to give camomile waters but an opiate will be found useful: if we add to an ounce and a half of water, one drachm of liquorice or some preparation of equal strength, and give teaspoonful doses every hour till the infant is freed from pain. One of the best, simplest, and a certainly harmless means of giving relief is irrigation with warm water. A catheter tube warmed and greased and connected by tubing with a syphon arrangement is passed gently, some distance into the rectum, and warm water allowed to flow freely into the bowel and wash it out thoroughly; a great quantity of fluid is often set free with mitigation of all the symptoms. Irrigation may be practiced once or twice daily in cases of obstinate colic and is almost always successful in attaining its object.

Biplopnea is most frequent during the first three months among infants at the breast, and occurs less frequently as the child gets older.
Artificially fed children, on the other hand, are always liable to and rarely free from attacks. The cause varies, in children born prematurely, that is, in less gastric juice secreted, the formation of the jaws and the development of the child prevent it from encumbering well and regularly and air is often drawn in with the milk. Or it may be brought on in breast-fed children by the menstruation of the mother, or wellmeaning and the consequent alteration in the character of the milk, or by the onset of pregnancy or disease in the mother, or by faults in the diet of the nurse or disturbance of temper. Too much, such as gruel, princely feeding, tents may also act as causes.

In children who are not at the breast, but are fed artificially, the food in always at fault, either being unsuitable or badly prepared. The different breeds of cow's or even cow's food are fraught with causes of dyspepsia. In many cases the infant seems to have an idiosyncrasy, and to be unable to digest the food which he or she would eat in a natural way.

As symptoms we may notice in nearly every case vomiting or sickness, often preceded by hiccup. The child is pale, the tongue may or may not be clean, but the breath is generally sour. And aphthous patches are often seen in the mouth; the stools are somewhat lightened but they may be at first no pain. If not relieved this early, fermentative change are likely to occur, melancholy set in and with it attacks of colic, the child crying frequently. The stools become more numerous, slim or soft, instead of three or four in the day; at the beginning of the attack, they are not much altered in consistence, the colour is usually bile yellow or slight, becoming green if repressed, and they contain curdy masses of undigested food; the reaction is acid.

They may often be observed erythema and irritation around the margin of the teats and on the umbilicus of the thighs, the child also shews signs of discomfort, in restless, sleepless, fretful, starting, convulsions; the appetite is capricious, often apparently voracious, but food being refused soon after the child has begun to take it, the temper formerly bright and sunny become fretful.
and painful and the numerous signs are observed by which an infant licence to distress. The course of this affection differs in different cases; the most favourable are one with someone, children as the tend; then, if the condition is corrected or often without treatment, the meteorismus disappears, the attacks of colic become less frequent and less severe, the motions decrease in number and gradually assume their normal character and colour and the vomiting and hiccup cease. But in other cases, especially in artificially fed children, it may pass on to a state of chronic dyspepsia or develop into intestinal catarrh.

When this latter condition appears, the stools become yellowish, white and fluid, acid or sweet and containing largely of undigested food; at first they are fluid only once or twice a day but gradually become more frequent till there may be from three to twenty daily. The attacks of colic are more severe, and during defaecation increase in number and severity; there is continual and acute meteorismus, constant flatulences, crying and evident pain.

Chronic dyspepsia we meet with generally in children who have had to depend entirely on artificial food such as bread, soft confection, carrot, biscuit, and milk, often of questionable purity. When we see a case of the kind brought before us, we observe that the infant is pale, with depressed forehead, unelastic, loose skin, and placed muscles, the weight is subnormal and there may in nearly every case be noticed clearly a tendency to a rachitic condition or rachitis already developed to a certain extent, which will tend to manifest itself more strongly the longer the dyspepsia lasts. Not infrequently also a hemia will be found to exist, which has been favoured, if not caused, by the constant crying and executive efforts acting on already nourished abdominal muscles.

In these cases of dyspepsia the prognosis is naturally very different at different stages. When the condition is recognised early and the cause is clearly traced, the issue is always favourable; but
In chiefly in breast children, who depend solely on the food for nourishment, for their we are able to find out what is at fault and correct it, but where the weaner is old and the milk of inferior quality, these are more difficult in setting matters right.

Artificially feed children, the results most likely to be favourable, if a weaner can be found, otherwise it is more dear. It is worse the younger it is and in summer more dear is, in winter. As regards treatment, we sometimes observe an acutely cathartic affection of the stomach, with little in elevation of temperature, poor tongue, much cough, vomiting, and diarrhea, her is the case is seen early and the child is strong, to may encourage the vomiting, or give a dose of castor oil to get rid of the irritating substance which has been causing the disturbance and in this way, give rest to the organs. The child must be kept quiet in bed, only fluid food, and that in small quantities, administered. If the vomiting is severe, we may give cold offertory drinks, or teaspoonful doses of a one per cent solution of tartar emetic, or an opiate in teaspoonful doses after the stomach has been set.

If this are without effect, a powder containing, a quarter of a grain of sulphate of lime with half a grain of quinine and a few grains of sugar is often useful. External applications are helpful, a well made leeches and mustard poultice being the best.

In less acute cases, if the child is premature and general debility the cause, we must regulate the nursing carefully. Every half hour or hour, the child should be put to the breast; but not allowed to suck long. If the menstruation of the nurse is the cause and it lasts long, or if the nurse is at fault in other way, she must be changed. If nursing seems to be the cause, artificial food having been given too early, a return to the breast is the best means of cure. In children, who are being fed artificially, if the weight is decreasing, and the stools are fluid, every effort should be made to obtain a weaner; if this is impossible, all artificial methods of feeding demand a treat beginning with the simplest.
complicated and lead complicated. Medically, we may give a
formative child, small doses of peptin, as for instance
leap-proofed doses of a mixture containing, fifteen grains of
peptin, and ten minims of dilute hydrochloric acid in three
ounces of water just before food. If the vomiting is acid, a two
per cent. soda solution or leap-proofed doses of a mixture
containing five grains of carbonate of magnesia in three ounces
of water may be effectual. If there is constipation, small doses
of a watery infusion of Rheum or mineral water may be given.
until the stools become regular or purgative in the form of apples
boiled or stewed, but simple enemata from one of the safest and
best means of relieving constipation especially in young infants;
or the change in diet mentioned above or the free use of water as a
drink are also useful. Should the vomiting instead of being acid
be neutral or alkaline, peptin given as above is useful or
leap-proofed doses of a half per cent. solution of lactic acid or a
one per cent. solution of hydrochloric or lactic acid. Pain
may be relieved by fomenting the abdomen, or by administering
an enema as above with or without small doses of a one per
cent. solution of laudanum of cascara in chronic cases. In any
chronic form of dyspepsia with anemia and constipation,
effervescence with iron are useful given after food. As a stimulant
tonic he may give in chronic cases small doses of quinine or
laudanum of cascara. When colic is also present, daily irrigation
with warm water should be persevered with.
As an accompaniment of or sequela of dyspepsia in one or
other of its forms Catarrh of the intestine is very frequently
met with. And I think we may distinguish three forms which,
though often blended together so that they cannot be separated,
yet may in individual cases be recognized singly, and which,
this can be attained: our treatment is simplified and rendered
more accurate.
I would then divide intestinal catarrh into catarrh of the small
intestine, catarrh of the large intestine, and catarrh of both
small and
large intestine.

Carcass of the small intestine is the form most commonly met with, in such tissues, especially amongst those who depend chiefly on artificial food. The cause is always or nearly always inflammation, feeding in acute or long lasting diarrhoea. In chronic cases, it occurs often at the period of digestion, being that of indigestion in itself the cause, but rather the change of diet—which is so often made at this time when the intestine and the glands are undergoing developmental changes. Sometimes interference with the nutrition of the skin seems to be a depressing cause, as measles or eczema. Sometimes again may be traced to exposure to cold, and here, I believe, we may often lay the blame to the insufficient protection of the abdomen by too short clothing.

The characteristic symptoms are loss of appetite, great restlessness, with disturbed sleep, thirst, attacks of colic, increasing meteorismus which becomes very considerable, and diminished secretion of urine. The stools are fluid and watery, of a greenish or yellowish brown colour, smelling, feculent and offensive. and usually of an acid reaction; they vary in number with the intensity of the disease but are always abnormally frequent and offensive, several evacuations occurring at one time with explosions of flatus after which relief follows.

If the attacks are acute, as we meet with it often in breast children at teething, we have all the above symptoms intensified, the stools, very frequent, the child pale with sunken features and cold extremities, and there is great danger of collapse if the disease is not checked.

If the affection may be chronic, and then is either the result of successive acute attacks with remittance, gaining, or for weeks, with great resulting evacuation, or it may be chronic throughout, beginning with occasional attacks of colic; and then we notice that the stools are occasionally fetid and offensive, though at times seemingly natural and so escaping notice. The weight become stationary or decreases, the appetite...
that is, atrophy of the muscles and concretions, or old blood come out the face and as the disease advances the circulation fails in the extremities. At this stage healing is not usual, as the muscular and mucous coats of the intestine become atrophied, no absorption of nutrient can take place and death results.

In catarrh of the large intestine we meet with different conditions and symptoms. Here there is colic and little or no wind or flatus at stool; instead of melismenia there is squeezing in of the abdomen. There is always desire to go to stool, the motions are frequent but scanty and stringy and the evacuations are followed by tenesmus, no relief from discomfort occurring after the passage of motions. The reaction of the motions is neutral or alkaline.

When these two forms pass into one another and both the small and large intestine become affected, there is a blending of the symptoms of both forms. Then there are attacks of colic before some stool and not before others; flatus is expelled in quantity with some evacuation; at other times there is none; tenesmus following the passage of faeces may or may not occur. The motions are sometimes expulsive and watery, at other times scanty and stringy: in fact the characteristics of the two affection may occur singly or combined.

Either of these conditions may assume dangerous proportions and the child succumb from exhaustion and death in the more hot weather when occurring in summer in children who are being breastfed.

As complications we find dyspepsia, often the primary affection, consternation or attacks of acute gastric catarrh, especially in older children in summer accompanied with elevation of temperature, vomiting, and great thirst. Bad cases may pass on into cholera infantum with frequent vomiting, gurgling of the abdomen and rice water stools, ending in fatal collapse. Children who have had little or no breast food and have been fed on bread - baby flour - arrow-root or inferior milk are very liable not only to attacks of dyspepsia, from which indeed they are not often free for any length of time, but also to catarrh of the intestines in one or other of the above forms. The extreme importance of

...
giving every attention to the nourishment of infants cannot
be overestimated, for in this way we may frequently keep
the child free from attacks and also by change of diet or the
first appearance of suspicious symptoms, often correct the evil.
So in treating intestinal catarrh the first point to be attended to
is the diet, which in almost every instance will require to
be changed. If the infant is being breastfed, it should be again
placed at the breast, till the attack, subsides, and then breastfeeding
be recommenced more cautiously, taking care to avoid the food
which was at fault in the first instance. If the child has been
altogether artificially fed, cow's milk should if possible be
obtained, failing which we resort to the best substitute, in order
of the reaction of the stools is acid and the attack slight, the
addition of soda or lime water to the food will sometimes
be sufficient. If the reaction is neutral or alkaline as in cases
of the large intestine, we may give lactate or lactate acid as
above either with the food or just before feeding. It is always
better never to allow a full meal at one time but rather to give
smaller quantities at shorter intervals, so as not to overburden
the irritated stomach and intestine. Cocoa with some cases
alleviate the loose condition of the bowels or even one of the
malted foods. Irrigation is always useful, it is soothing to
the child and by removing offensive product, gives the bowel
rest. In catarrh of the large intestine we may employ a starch
injection either simple or with the addition of half a drop of
a drop of tincture of opium, or astringent as alum or
the glycerin of lactic acid added to the water used with
the irrigator with sometimes check the excessive secretion from
the mucous membrane of the bowel. Sometimes may be relieved
by aperients and emetics, to which the addition of small
dose of sulphate of iron may prove useful in stopping the
water stools from the small intestine and stimulating the
dehesia. When there is vomiting and offensive stools, bromel in
an excellent remedy. Ointment applications to the abdomen
frequently
Frequently give great relief by relieving the pain and spasmodic action of the bowels, such as a large limited portion not too moist, with the addition of a little mustard, this should be applied very warm and should extend all over the abdomen, and be covered with a towel of warm dry flannel. Sometimes plain warm or hot water and分局 held with a few drops of opium or solution of poppy-head in a good application. While a warm bath will often soothe as to good.

In all cases the rapidity with which change occurs in young children must be kept in mind and every fluctuation watched for and recognized. The necessity of studying the nutrition of young children, and the urgency for some improvement on the present methods of feeding, is very great when we see how easily and suddenly an infant, apparently healthy, may be attacked by, and quickly succumb to, one of the many forms of disease which are caused by inappropriate food. Physicians and those that have the care of young infants ought to always be on their guard against, and regard more earnestly, ailments often considered trifling, but which, if neglected, may soon assume serious proportions. Do we, as we should do, look upon the young infant as an exceedingly delicate and tender piece of mechanism, as complicated or more so than that of the adult and infinitely more fragile and exposed to injury? If so, we must endeavor to train ourselves to appreciate correctly the exact significance of the occasional indications of disturbed function shown by the infant at every stage of its growth, and by patiently trying to elucidate scientific methods of regulating the nutrition and physical education of young children, based on physiological principles, break down the barrier hitherto opposed by custom and nursing tradition.

But while we exercise due vigilance over the nutrition of feeding of infants, we must not forget that other points have been attended to with equal carefulness or the mischief which we are working off, one direction will gain entrance in another and as certainly do harm.
Careful and judicious feeding is essential indeed to the well-being of infants, but that alone is not sufficient to ensure the growing up of the infant into a healthy child, if we neglect other almost equally important details. I refer to the health management of children in relation to all the circumstances of everyday life. From the first hour after their birth, infants are the victims of many tradition and ignorance. Among the upper classes, this is met with in the least degree, but the lower we descend on the social scale the more striking does the usual blind adherence to old laws, fables, and the disregard for common sense and cleanliness. And first with regard to clothing, if we think of the infant just before birth lying in the interior cavity surrounded by an equable temperature and wrapped, as it were, in envelope of motherly softness, and then contrast this with the condition of the child an hour later, when after the necessary cleansing it is rolled tightly in band after band of woollings, which compared with its recent covering are irritating, rough and coarse, confining the movements of the chest and abdomen, we cannot fail to see how irrational this treatment is. What should be aimed at is warmth of an equable temperature and soft unsaturating clothing, closely covering but not confining the movements of the different parts of the body, but then to be not light, flimsy, or cold stuff linen garments, but let everything be of the finest and softest flannel, falling closely but not tightly round the child, and in the breech ensemble let soft flannel be substituted for cotton sheets. By this means the child is kept warm and free from restraint and discomfort and is better able to do all that it has to do for the first few weeks, sleep quietly, in the intervals, between feeding times. The present system of early short coatings, or changing from long to short clothes is not free from danger, and if it has to be done, let the infant have soft wooden stockings instead of short socks, rarely reaching above the ankle, while the bare legs are thickened about without clothing. I am not sure that it is right to leave an infant's head entirely uncovered in the house, when we think of the exceedingly thin condition of the bone of the cranium and the
the open unventilated nursery. When the child begins to run, the tendency is still to clothe insufficiently, and we see the upper part of the chest often bare and the sleeves of the arms and sleeves, while the dress is undoubtedly in many cases too short, hardly reaching to the knee. In girls, especially, I would insist on the abdomen and thighs being warmly dressed, not heavily clothed. Many diseases of children, such as affections of the lungs and bronchus, are in different cases due to insufficient covering of the body, and predispositions to chronic are fostered. Turning from the clothing of the body during the day to the night, and bed clothing, an infant or young child should always wear either alone or over cotton a nightgown of fine soft flannel, it is a matter of opinion whether adults are wise to wear cold cotton night clothing and to sleep between cold cotton sheets, but young children at any rate should be warmly clothed at night, very few children sleep through the night without getting arms or legs out from under the bed clothes, and sometimes the entire bedclothing is thrown off by the restless little sleeper, so the body clothing should be of flannel or reaching down to the feet. The clothing of the berceau or cot should be warm, but light, a little cooler down, quite being the best covering over the sheet. The cot should never be placed near a fire or close up to a bed in which adults are sleeping, but in a room situated in a corner protected from draughts between windows, door and chimney. Except in extremely cold weather and during the last few weeks of an infant's life or during illness, it is undesirable to keep up a fire in the sleeping room all night. In summer or any other season, if should be interdicted. The child should not be heavily clothed but should never have a chance of feeling cold, and like abdomen and legs ought to be warmly protected, varying the thickness of the coverings with the outside temperature of the air. As regards the nursery, whatever it can be managed, there should be a day nursery, and more than one bed ought have to sleep in the night nursery. The night nursery is best with a south or south-east aspect so that it may be warm with the morning.
Morning soon when the children are arising. The room should be thoroughly ventilated without draught day and night. And here I may add to the practice of accustoming children to go to sleep with a light always in the room; instead of leaving it, it often causes nervousness and the habit once formed is difficult to break off: it must also not be forgotten that any luminous light consumes the oxygen in the air of the room and deteriorates the quality of the air.

The day nursery, where possible, should have a south aspect and be well ventilated without draught. The time of rising and going to bed should be early; an infant—naturally requires frequent feeding during the first few months, and all children, before early of healthy and healthily managed, but unfortunately, many children after infancy remain up far too late. Children of five and six I have seen in some families remaining up to the direct of a late dinner and given wine at that hour, and in consequence, when they go to bed, they are heated and excited and are either unable to sleep or have restless sleep disturbed by dreams, and awake unrested and heavy-eyed and out of order the next day. Regularity, in all the details of nursery management is most essential, regular rising and going to bed, regular hours for meals and regular exercise. By attending to these particulars we not only early inculcate good habits, but avoid any unwonted strain on the various organs and guard against irregularities of function. One point which I would insist upon, as I believe less attention is given to than it deserves, is that children should be from their infancy accustomed to have the bowls moved regularly every day as far as possible at the same hour. It is to a great extent a matter of training, and parents and nurses should train the children under their care to regular habits in this particular, and be especially careful to enforce obedience. Children, are always careless about the matter and only attend to their function incidentally or discomfort prompts them. Consequently, indigestion and intestinal trouble, of various kinds are very liable to occur and
And may result in serious mischief. Irregularities in late life, especially among women, may in many cases be traced to careless nursing and want of attention in childhood. By carefully watching the function of the bowels, constipation or diarrhoea may be detected earlier and be more early dealt with. More care might with advantage be bestowed by nurses and mothers on the health of their charges. If we bear in mind and impress upon them the fact that the skin is a great and very important organ and requires as careful attention and treatment as other important organs, for instance the stomach and liver, we should greatly add to the child's chances of health by keeping the skin in a healthy condition, and not infrequently saving skin affections. During the first few years of life the skin is, I believe, more sensitive and plays a more important part than later in life. How easily the skin of an infant, a child, and becomes more if subjected to any irritation or exposure, is known to all. The great frequency of skin eruptions, especially those of an exanthematic nature, in infants of all classes but chiefly among the poor, and indeed in families but the practitioner. Injury of a considerable area of the skin is often followed by death, as we see in extensive superficial burns. Hill and others have called attention to the occurrence of sepsis in the urine in cases of extensive burns, showing how the balance of secretion and excretion is upset by the strain thrown on the organs when the skin is injured. I have also observed that after the healing of burns in young children, superficial abscesses or sinuses are very frequently seen and give rise to considerable trouble. Children too in a much larger proportion than adults are subject to the eruption caused by or accompanying stomach derangement, and the soils of denizens. These various points demand from us that we should not neglect or make light of the care of the skin in children. Scrupulous cleanliness is the great safeguard, in infancy, from the day of birth, onwards the child should be bathed regularly.
regularly every morning and evening and even part of the body thoroughly cleansed. Many mothers in the lower classes are afraid of washing the heads of their infants, and in consequence of this neglect, one often sees the scalp covered with a dirty scaly coat originating from want of cleanliness and too often ending in a troublesome form of eczema. After bathing, the body and limbs should be briskly rubbed to stimulate the nerves and vessels of the skin. At the end of the first year the morning bath, which up to this age should be warm, may be given colder until at the second year it may with advantage be taken cold. That is to say, the water should have a temperature of between 50° and 60° F., while after the bath, friction should be employed over the whole surface of the skin. Even in infants of a year old, friction with a cold wet rubbe is often of great benefit in cases where there is any tendency to habitual or natural curvature of the spine or where there is general deficiency of muscular tone. The beneficial influence of cold bathing, followed by rubbing, on the skin and muscles is very great and beneficial. Bearing in mind that the child should never be allowed to get cold or shivery after a bath but that the body should be briskly rubbed until it is thoroughly warm to the extremities. Both boys and girls, trained and accustomed in childhood to cold bathing, every morning, will be able to continue the habit throughout life with pleasure to themselves, a positive benefit to health. In fact the action of cold on the skin, with the subsequent friction, stimulates the activity of the circulation in the extremities, it may in many cases be of use in avoiding or correcting venereal irregularities. The use of warm and cold sapy baths for this purpose is well known. In very delicate children, it is well to give some food as mère before the bath.

Among the means we should employ for keeping and bringing the body into a healthy condition is exercise in the open air. It cannot begin too early to accustom children to being out in the fresh air. In spite of the unfavourable nature of our climate,
children should go out far more frequently than they do, and
not only would constitution be strengthened and hereditary
disease warded off, but even acute attacks of illness would
probably be less frequent among children, if they were ensured early
taking constantly, in the open air. If the weather is mild, the
infant of a week old may be safely and wisely taken out of doors for a short time daily, and it should be a regular
rule for children, to be out of doors whenever the weather permits
for a daily walk. The question arises, how are young infants to
be carried out of doors? I would reply, not in the nurse's arms.
The better the child is carried in the arms indoors or out of doors
the better; for, in this way, the child is liable to be placed too
early in the sitting posture with the result of inducing curvature
of the spine. For the first three quarters of a year, the more a
child lies on its back, the better; but unfortunately in England
there is only one substitute for the nurse's arms, and that is
totally unfit for the first year. I refer to the perambulator; nothing
can be more barbarous or senseless than the vehicle used in this
country. Tied in with its face turned away from the
nurse, whose face it is always accustomed to looking at when indoors, the child is, if too young to sit up, propped up
with cushions & pillows, or if able to sit up, is strapped up in the
sitting position on a narrow seat with a tight apron in front
presenting a picture of utter discomfort. How much more sensible
is the carriage used by the Germans for children. It is in reality
a bed on wheels and usually consists of a box of basket work,
on four wheels; it is provided with blankets, pillows, and
clothing, and in it the child can lie at full length comfortably
and rest, about and exercise all its limbs, lying with its
feet towards the nurse and looking up at her face as she
pushes the perambulator along. Hood keeps off rain, sleet, and
the child either awake or lying asleep can be out-
breathing the fresh air in a thoroughly comfortable and un-
cramped position. It would be a great advance and a boon to
children.
Children of this form of carriage were adopted in England. Throughout childhood exercise in the open air must be insisted on as regular. Deficiency need not be considered a bad lot but rather a reason for its being persisted in: the close confinement to warm and often ill-ventilated rooms is most dangerous to health and prepares the way for attacks of laryngo-pharyngeal or throat and throat ailments, while it predisposes to rhinitis, anemia and glandular enlargements. All due precautions should of course be taken to leave the body warmly clothed while the child is out of doors and other children should not be allowed bareheaded merely with a hat on and no additional clothing, while the feet should be warmly protected against cold and dampness. Attention to the clothing of the feet in childhood is most important: nearly every child wears poorly shaped boots, adapted to the form of the foot. Thornton never regarded the anatomical form of the foot, but even rather at a real and fashionable appearance than a correct shape. Simple allowance should be made for the breadth of the foot from the base of the great toe across to the little toe, and the line of the boot on the inside, should be straight from heel to toe corresponding to the inner margin of the anatomically correct foot. By attending to these points space is allowed for the tournic to spread during walking and the child is enabled to walk, as it should do, from the heel to the end of the great toe with the other toes spread out. The length should be always sufficient and the heel low and broad, placed well back, while the sole should extend on all sides beyond the rest of the boot so that it may be really a platform for the foot to rest on. Tight boots ill adapted to the anatomical shape of the foot deform the foot, press the great toe downwards, and all the toes together and form the formation of corns and bunion, and in growing too tight, high heels placed forward under the foot are injurious to the spine and a fruitful source of troublesome backache in young women.

In addition, to bathing, exercise in the open air and careful attention to the feeding of children, much benefit may be derived from regular exercise, exercising the muscles, in fact by a species of gymnastics.
This in lateral curvature with deficient volume. Often in the muscles of the side, or where we find an exaggeration, the form of the chest gradually assuming the typical rachitic shape, in cases of incipient lung disease and in all cases where there is deficient expansion, a development of the thorax, in cases of partial paralysis or merely lack of vigor in the muscular system, even in young children, gymnastic exercise is a great aid. In young children, the nurse should be instructed to move the limbs regularly and methodically, that the arms may be extended, raised from the side, and carried backwards. So as to throw the shoulders back, and the chest forward; or the extended arms should be carried about the head, held there for a moment, and then thrown back and brought down to the side. In this way, the walls of the chest are expanded, the muscles of the thorax stimulated, and the lung inflated. In cases of lateral curvature of the spine, the arm on the side of the concavity should be raised above the head, a crossed behind the head, to add to and in strengthening the spine, expanding the walls of the chest on that side, and strengthening the muscles. A weight may be held in the hand on the side of the convexity while the other arm is raised above the head and in this way the strengthening action may be increased, though chiefly indirectly, by strengthening the muscle of the while side. As the child grows older and is able to do things itself under instruction, the same exercise may be used and also suspension by both hands from a horizontal bar. Light dumb bells, used properly, according to a regular exercise are very useful for the same purpose. I believe that drizzling and gymnastics are great aids to healthy corporal development and a positive means of cure, in the form of cases I have mentioned, namely rachitis, lateral curvature of the spine, tendency to or actual lung disease with flattened unexpanded chest and sloping shoulders. These exercises need not be obnoxious to children, by a little judicious management. There are games may be devised bringing in the required gymnastics.
hypocrasy and if the children learn to take pleasure in them the benefit is increased. In the first few years of life the mental training, though not to be neglected is of far less moment than the health management and training of the body. A diseased or ill developed frame, even with great mental power, is of less service to the individual and the nation than a well developed and healthy body with perhaps average mental ability. and if the body is well nourished and well trained the brain will participate in the general vigour of the body, and the entire being will attain to a greater state of perfection.

It may seem that little good can be derived from such trivial commonplace methods, and means of regulating the life of children, but infancy and childhood are the seed time during which the germ of much future its health and worthiness in adult life may be implanted and formed. Let the adult do what he will to injure his bodily repute and undermine his health, but it is a positive duty for parents and medical men so to train and nurture the child during its dependent and irresponsible years, that it may be launched on its voyage with a well developed and vigorous frame and organs unimpaired by disease.

Bernard-James Guillemeard.

The books of reference have been used, but I have
elaborated much of the first half or so of the paper
from notes taken by myself when attending the lectures
of Professor Monte, lectures on diseases of children at
the General Polyclinic at Vienna.

R.J. Guillemeard.