

Notes on the Nutrition and
Health Management of young Children.

A Thesis

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by

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Notes on the Nutrition and health management of young Children.

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 too 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 with 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 its life work, 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 would 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 dietetics 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 nutriment is best suited for the infant, let us examine the alimentary tract as we find it at this 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 profuse: the hard palate is not grooved deeply & of all 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 biting is possible and saliva is not secreted in sufficient quantity to act on starchy food.

From the imperfect development of the muscles of the mouth and cheeks, particles 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 perpendicularly 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 rugae, it is in fact a mere widening 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

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and vomiting is therefore common during this period. Passing on to the intestinal canal, we find that until dentition the intestines do 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 intestines being weak, favours the formation & collection of gases, 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, thus the motions of infants are pale & frequent. The pancreas is small and its secretion almost nil.

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 intestines. Milk is the only food which fulfils all these conditions, and yet in spite of this how often do we see the infant even during the first day after its birth fed with gruel, bread soup, Arrowroot, cornflour &c. &c 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 on 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 mouth gain power, the hard palate becomes hollowed and the mouth and its structures gradually assume the adult form. In the stomach, the development of the fundus goes on till the end of the second year and so vomiting is still frequent when the stomach is full. The intestines increase in length and the caecum acquires its adult shape and functions, the muscular coat becomes

becomes stronger and so there is less tendency to gas formation and collection. The biliary & pancreatic secretions also become more and more fully established. Thus the whole alimentary tract step by step reaches its full development during this period.

All these changes take place slowly and therefore the alimentary canal will not bear any sudden change in diet. If it is treated as the alimentary tract of an adult, gastric and intestinal troubles readily occur and in fact frequently happen, but are always referred to dentition, whereas dentition 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~~ stage and have not yet arrived at their adult condition.

During this period then, milk is the only suitable food and the best form of milk is of course the milk of the mother. When we look to the fact that, among children fed artificially, the mortality is 80 per cent during the first year of life, and that of the 20 per cent which survive many are richly or otherwise diseased, how reprehensible is the conduct of those mothers who, with a plentiful supply of that food on which their infants depend often for life and certainly for health, from some morbid reason often, I fear, to some extent encouraged by the medical man, will not suckle 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 nurse for her child and the following are some of the contra-indications to nursing.

Epilepsy, tuberculosis and the strumous diathesis: hysteria, severe forms of cutaneous disease, anaemia, chronic rheumatism, bone disease and indeed any condition of health which deteriorates the quality and quantity of the milk and renders suckling too severe a strain on the maternal resources.

As regards Syphilis, one would naturally regard it as a contra-indication, but unless the cachexia is virulent and profound, it is better for the mother to nurse at any rate partially, as a wetnurse is undesirable and the mortality of syphilitic infants fed artificially is especially great.

Age of the mother has also to be considered: before her eighteenth year a woman

is not a suitable nurse, and as the menopause approaches she also becomes unfit for the duty. If from one or other contraindication it is not advisable for the mother to nurse, or if, as is sometimes the case, the infant does not thrive in spite of both mother and father being healthy and the supply of milk apparently all that can be desired, then if possible a wetnurse should be obtained. In this country the value of wetnursing is, I fear, not sufficiently appreciated. It is 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 laity at large recognised fully the importance or, I might even say, the necessity of avoiding artificial feeding of infants until dentition or more truly the developmental period is safely passed, and the immense benefit accruing, by a strict adherence to a natural system of nourishment, not only directly to the infant, but, I think it is not too much to say, indirectly to the community, in so far that hereditary disease would become less frequently matured on account of the obstacles offered to its development, infantile mortality lessened and the hygienic 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 would be, that the physician should invariably make a thorough and searching examination of the candidate for the office of wetnurse and thus help to remove the very natural hesitation of mothers in trusting the life of their child to one who might be the means of communicating 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 cutaneous disease as scabies, psoriasis &c, cicatrices caused by strumous or syphilitic disease especially in the groins or axillae and any suspicious appearances on the palms of the hands and soles of the feet. Then the head demands inspection for parasites, crusts or scales or falling out of the hair. The state of the mucous membrane of the mouth, gums, tongue, pharynx and the nose should be noted and the glands and absorbents also require attention. In every case it is important to percuss and auscultate the chest so as to ascertain the presence or absence of lung disease especially phthisis, and cardiac disease. The liver and spleen as important organs

organs concerned in the blood system should not be passed over. In the bones, cicatrices or nodes 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 derangement of the menstrual 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 let there be a thorough examination of the breasts: these should be distended, not loose 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 incontinence of milk militates against the efficiency of the nurse. The nipples should be long without cracks or excoriations and the areola healthy.

If, after the child has suckled, a good stream of milk can be still pressed out 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 the surface of the thumb nail, if it keeps a globular droplike form and is of an opaque white colour, 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 wet nurse, from eighteen to twenty is the best age: she should not be with her first child but rather with her second or third as then the history of the previous nursing can be enquired 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 later 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 awakened at regular times and put to the breast but at night though regularity 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. At 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 shows 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 suckle till the breast is empty or until it has had enough: one breast only being used for one meal and the other for the next: by this rule 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 nurse whether 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 and household cares or the system excited by too much society or occasional outbursts of bad temper, the milk is sure to deteriorate in quality and quantity and the infant will soon give indications by restlessness loss of weight or attacks of dyspepsia that there is something amiss with its nourishment. In dieting the nurse no special diet is indicated: the ordinary diet should not be changed; and this especially applies to wetnurses - for if, as generally happens, the wetnurse is a country woman or at 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 made dishes - strong cheese, acids, oily fish as salmon &c are injurious. During the nursing period

period 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 stout, 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 if continually goaded on and excited by doses of stimulant the function of the breast is disturbed 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 drinks highly charged with carbonic acid 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 speaking if the menses appears at the fifth month of nursing or later, it will not be necessary to change the nurse, but if it sets 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 seriously, a change is desirable.

Diseases of the breasts as fissures, 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 then let the breast afford the only 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 rickets 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 this mortality so serious to the community and so discreditable to the profession.

As far as we know at present, milk in some form is the best artificial food for young infants. Anes milk and goats milk approach most nearly in composition to human milk but as a rule they can only be obtained with difficulty and are not within the reach of all classes. Cows milk comes next in the scale and is generally available. It has however certain disadvantages. The proportion of casein contained in it is large and it curdles in large flakes in the stomach, not in small flakes as 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 wetnurses may be obtained: there are, it is true, a few here and there 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 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 eighth 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 teaspoonsful of a one per cent. solution of sugar of milk is sufficient to add to each bottle of milk and it is useful
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in all cases to add a small quantity of soda: a teaspoonful of a one per cent. solution of bicarbonate of soda is enough for each feeding bottle of milk & water.

The amount to be given the child at each meal will naturally vary with the age and size of the child. At first from two to three ounces are ample for one meal and this quantity should be gradually increased as the child grows older. The meal times 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 tubes and complications, which are a constant source of trouble from the difficulty experienced in keeping them sweet & clean and persuading nurses and mothers 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 on one of the flat surfaces to admit of the introduction of milk and also to allow thorough cleansing this aperture should be left open or closed with a perforated cork which should be as solid as possible, not honeycombed as many corks are and admitting of the lodgment 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 allow the nipple to be fixed 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 fresh cows milk does not agree, condensed or Swiss 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 boils, but it does not curdle in such large flakes as cows milk and is

useful

useful in summer in large towns, 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 intestines it will often be found beneficial as a change. It should be mixed with water in the following proportions.—

From the first to the third or sixth week one part of milk to fifteen parts of water.

From the third or sixth 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 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 ~~an~~ a valuable substitute, but I have had no experience of these myself with the exception of the Austrian preparation 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 Liebig's food was one of the first malted preparations brought forward and is very useful, the following modification may be used.

Dissolve half a drachm of bicarbonate of potash 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 gruel warming 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

of the intestines it is also to be recommended. When given as the sole nourishment it requires to be mixed with water, as follows —
 From the first to the third week, two parts of water to one of Liebig's food.
 From the third week to the second month, one part of water to one of the food.
 After the second month it may be given without water. Water should also be given to the child to drink as this food creates thirst.

Among the many kinds of patent Infant foods I have found Scovory and Moore's food for Infants very valuable and when no other kind of food was borne, I have seen infants take it readily & thrive on it. Looking to the fact that Cows milk contains a large proportion of casein and that casein is digested more easily if fatty matter of some kind is taken with it, Cream may be added to milk in amount proportionate to the age of the child. Beginning with three 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 does not agree well with the infant, a small quantity of well boiled fine oatmeal gruel added to the milk is well digested and assists by dividing 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 veal will often be found a useful addition to the diet especially if there is any tendency to richness or where the child is anemic, as it contains albumen and a varying proportion of earthy 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 rusks & biscuit food should never be given before weaning.

During the first year or at any rate during the period comprised between birth, and dentition, or more accurately the commencement & progress of those changes in the alimentary tract and the organs connected with it which take place toward the seventh month onward,

if the infant is being fed partly 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 the downward direction. In infants changes for the worse or better take place very rapidly and if mother nurse or physician suffer their attention to slacken or are not trained to attach sufficient importance to slight symptoms, much valuable time may be lost before the danger is recognised and means can be taken to avert disaster.

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

The cool scalp with the brain pulsating regularly in the fontanelle, the bright eye, clear firm and elastic skin, the moist red lips, the even happy temper, placid sleep, keen relish of food and evident enjoyment of life which a healthy infant exhibits are satisfactory evidences that progress is being made & all going on well: but on the other hand, when we notice that the skin feels harsh & hot, that the fontanelle is abnormally prominent or depressed, when we see that the child is restless and evidently ill at ease, when it sleeps fitfully and irregularly, often starting or wailing, clenching the fists 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 discoloured 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 in 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 recognised 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.

Month.	Daily increase.	Monthly increase.	Total weight.
1 st	13½ Drachms.	1 lb: 9 ounces.	8 lbs 9 ounces.
2 nd	12½ "	1 " 8½ "	10. " 1½. "
3 rd	12. "	1 " 6. "	11. " 7½. "
4 th	11. "	1 " 4½. "	12. " 12. "
5 th	10. "	1 " 3. "	13. " 15. "
6 th	9½. "	1 " 1. "	15. " - -
7 th	8½. "	15. "	15. " 15. "
8 th	7½. "	14. "	16. " 13. "
9 th	7. "	12. "	17. " 9. "
10 th	6. "	10½ "	18. " 3½. "
12 th	3¾ "	6½ "	18. " 10. "

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 shews, but if the weight falls below that indicated in the table or below the corresponding ratios or does not increase at the same rate, then we must be on our guard and endeavour 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 slowly and were adapting themselves for the reception and digestion of a different form of diet, and therefore by indiscretion or neglect may have their equilibrium easily disturbed. We must also remember that for the next few months onward the alimentary organs are passing 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 as it were be fairly started in life with healthy sound 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 exact period at which we should begin to remove the infant from the breast and accustom it by degrees 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

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 puerperal changes and are again assuming their usual functions, 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 be becoming 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 & 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 ninth month the infant should be taking the breast about six times in the twenty four hours, we begin by giving one meal of cows milk or broth instead of the breast, so that the infant takes the breast five times & milk or broth once in the twenty four hours. The milk should be cows milk of the best quality that can be obtained. The broth at first is preferably made from veal as I have mentioned above: it should be made as beef tea is usually prepared - taking about a quarter of a pound of lean veal, cut it up into large dice and place it with about two tablespoonsful of cold water in a covered jar: this jar is then to be immersed for two thirds of its depth in a pan of boiling water & 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 mark 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 baby may not agree and then mutton, chicken, or beef demand a trial. At the end of a week, if all is going on 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 medicinal laxatives 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 malted foods will bring about the desired result.

Diarrhoea on the other hand may be checked by cocoa or malted food or by adding lime water to the milk. 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 given during weaning or sometimes of necessity earlier, and then gradually turn our attention to the dietary of children during the first few years of life.

More harm has arisen from the too early and indiscriminate use of amylaceous food than from any other form of diet. I think it is not too much to say that, if the starchy foods were kept out of the reach of mothers and nurses attending young infants, the infantile mortality during the first year would considerably or at least perceptibly diminish.

diminish. I am speaking of amylacea unmixed with malt, such as we find continually 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 amylacea absolutely excluded.

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

In ricinels and chronic intestinal catarrh leguminous food is often useful given once or twice daily in milk or broth but it is well not to give it before the sixth month.

The various kinds of nursery rusk are not suitable as a sole diet, but may be crumbled into broth or milk after the sixth month in artificially fed infants. Flour baked in the oven till it is of a fawn 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 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 nine months. After the fifth or sixth month it may be given to artificially 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 freshly 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 ricinels at an early age. The reason for straining the porridge before giving it to infants is that

that the large grains may be removed, which might, if taken, set up irritation of the stomach & bowels. Children of fourteen or fifteen months however can take the porridge unstrained, 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 oatmeal 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 homes of the poor. It is 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 so considerable a proportion of bone forming nutriment it is *facile princeps* 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 broths, if the infant is at the breast and thriving, neither 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 four months, beef broth given 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 six or ten teaspoonsful if the motions show that it is being well digested, is often of great value in anæmic ricketty children, in cases of chronic catarrh of the stomach and intestines.

intestines with diarrhoea, & in chronic hydrocephalus. It may be necessary to add a little sugar before the child will take the meat. When meat is given, water is needed as a drink, the meat having a tendency to create thirst.

In children that have been fed at the breast and weaned at the ninth month, gravy 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 mixed with gravy and vegetable. 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 this account. Bleeding from the kidneys has been set up by a meat diet: nocturnal incontinence of urine, if not caused, is certainly favoured by it and vulvitis may also be traced to the same source in female children. Let meat then be avoided during the first year at least in the case of healthy children and its use only begun gradually later.

Though not 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 menu, proving a light nourishing diet for children. Salmon, mackerel and oily fishes generally, together with shellfish and crustacea are better excluded but white fish as haddock, sole, whiting, turbot and trout boiled plainly, or with vegetables will vary the diet and be a valuable addition to the list of foods. It may not be out of place to mention that fish require 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 fishes, although minute in

in quantity may have its effect in building up healthy brain and nerve tissue 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 baked flour, sago, rice or oatmeal, in each case cooking thoroughly.

Vegetable soups should not be forgotten, both as being nutrient 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 others. Whichever vegetables 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 broth, which contains the soluble parts as the sugar, albumin and legumin of the different vegetables, may be added to meat broths, 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 thus they are cut off from one very useful source of nourishment. But if we extract the soluble nourishment from vegetables and disguise 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 is very generally at fault, indeed in few households are vegetables 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 admissible as a food, but not indiscriminately. Before the third month colic and dyspepsia often result from its use, 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, breast children who suffer from dyspepsia and have slimy 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 not well 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 food. Milk should remain for several years the chief source of nourishment, taken pure or in bread & milk, or with oatmeal porridge or in the different kinds of milk puddings. Meat once daily is amply sufficient. Vegetables on the other hand as recommended above may be always given once or twice a day with advantage. The dislike to many vegetables and also to the fat of meat which we observe so often in children, is more owing to bad management than to real aversion on the part of the child, and not infrequently this disgust for certain articles of diet lasts on into adult life chiefly owing to the injudicious giving way to children's inclinations.

Without advocating vegetarian principles, we can with wisdom give a more important position to vegetables on our diet-list, and expend more care on their preparation both plainly & in made dishes.

The amount of nourishment to be gained is considerable and non-stimulating, and though meat is by no means to be excluded as a most valuable form of diet in the nursery, let us see vegetables 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 disorders but it is rather the injudicious use of over- or under-ripe fruit that does the mischief: preserves also which from careless manufacture have fermented or moulded in keeping may cause digestive troubles. But ripe fruit either raw or in compote, stew, puddings or preserves, has no inconsiderable worth as 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 will be safer always to have fruit cooked before giving it to children, but all stone fruit should be freed from stones, children being very.

be liable to swallow them, and though in most cases no harm results, the stone being passed at stool, yet there is a possibility of danger from lodgement of the foreign body somewhere in the intestinal tract or from irritation set up by its presence. Dried fruits such as Currants & raisins are very frequently not thoroughly cooked in cakes and puddings and in this way may be injurious. It need hardly be said that highly seasoned dishes, condiments or spices, rich puddings made with wine or brandy, in fact any stimulating or mixed forms 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 unseasoned: there is enough material at our disposal to give abundant and appetising 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. No 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 elder children, there will soon be no excuse for the badly cooked and consequently indigestible meals 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 permissible as also wine, spirits and malt liquors. It is questionable whether as a tonic nourishment stimulants may or may not be given in small quantities medicinally to children in certain cases. I am inclined to believe that in anæmic, 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-liquor such as a pure light and rather bitter table beer will be found the best kind of stimulant as containing little alcohol but tonic and nutrient properties. So little dependance can be placed on the genuineness of wines 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 at once 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, that which may be converted by injudicious use or careless habits into a subtle and very dangerous enemy.

Having briefly touched upon different points to which attention may be directed in the nutrition of children during the early months, it will not be out of place to note a few of the mischievous results which are liable to follow if sufficient care and judgement are not exercised in this, to many seemingly trivial, matter. Of these I would only mention flatulent colic - dyspepsia and disorders of the intestinal tract. 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 maybe 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 absorbents 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 particles of food; or it may indicate catarrh of the small intestine when

When much flatus is passed before the motion. Constipation even of only twelve hours duration is another exciting cause. The presence of *Ascaris lumbricoides* 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 fists are clenched and the elbows bent and pressed tightly against the sides when the spasms of pain come on. Reflex movements may also be set up and even epileptiform attacks. The character of the motions varies, sometimes they are hard, at other times soft. Whatever maybe 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 to turn the infant face downwards with the palm of the hand, previously warmed, pressed against the abdomen: held so for a few minutes the pressure dispels the wind and the warmth soothes the pain. If this gives no relief, friction of the abdomen may be tried but when the pain is evidently very great, a warm bath will often accomplish the desired result. It is not advisable to give cathartics but an opiate will be found useful: if we add to an ounce and a half of water one drop of tincture of opium 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 caoutchouc tube warmed and greased and connected by tubing with a siphon 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 flatus is often set free with mitigation of all the symptoms. Irrigation may be practised once or twice daily in cases of obstinate colic and is almost always successful in attaining its object.

Dyspepsia is most frequent during the first three months among infants at the breast, and occurs less frequently as the child gets older.

Artificially

Artificially fed children on the other hand are always liable to and rarely free from attacks. The cause varies, in children born prematurely there is less gastric juice secreted, the formation of the jaw and the weakness of the child prevents it from suckling well and regularly and air is often drawn in with the milk: or it may be brought on in breast children by the menstruation of the mother or wetnurse and the consequent alteration in the character of the milk: or by the onset of pregnancy or illness in the nurse, or by faults in the diet of the nurse or disturbances of temper. Too much suckling or irregular feeding times may also act as causes.

In children who are not at the breast but are fed artificially, the food is always at fault, either being unsuitable or badly prepared. The different kinds of amylaceous food are fruitful causes of dyspepsia. In many cases the infant seems to have an idiosyncrasy and to be unable to digest the food which another child of the same age is throwing on.

As symptoms, we may notice in nearly every case vomiting, often preceded by hiccoughs. The child is pale, the tongue may at first be clean, but the breath is generally sour and aphthous patches are often seen in the mouth: the stomach is somewhat distended but there may be at first no pain: if not relieved then early, fermentative changes are liable to occur, meteorism sets in and with it attacks of colic, the child crying frequently: the stools become more numerous, six or eight instead of three or four in the day; at the beginning of the attacks they are not much altered in consistence, the colour is usually pale yellow or white becoming green if kept, and they contain curdy lumps of undigested food; the reaction is acid.

There may often be observed erythema and irritation round the margin of the anus and on the inside of the thighs. The child also shows signs of discomfort, is restless, sleeps fitfully, starting & crying: the appetite is capricious, often apparently voracious but food being refused soon after the child has begun to take it. The temper previously bright and sunny becomes peevish

and

and fretful and all the numerous signs are observed by which an infant evinces its distress. The course of this affection differs in different cases, the most favourable are met with among children at the breast; 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 hiccough 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 in reaction and consisting largely of undigested food: at first they are passed only once or twice in the day but gradually become more frequent till there may be from six to twenty daily. The attacks of colic at meals and during defecation increase in number and severity, there is continual and great meteorismus, constant restlessness crying and excruciating pain.

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

In these cases of dyspepsia the prognosis is naturally very different at different stages: When the condition is recognized early and the cause is clearly to be traced, the issue is always favourable; this

is chiefly in breast children, who depend solely on the breast for nourishment, for then we are able to find out what is at fault and correct it, but when the wetnurse is old and the milk of inferior quality, there is more difficulty in setting matters right.

In artificially fed children the result is most likely to be favourable if a wetnurse can be found, otherwise it is more serious. It is worse the younger the infant is and in summer more than in winter. As regards treatment; we sometimes observe an acutely catarrhal affection of the stomach, when there is elevation of temperature - foul tongue - hiccough - vomiting, and distension, here if the case is seen early and the child is strong we 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 effervescent drinks, or teaspoonful doses of a one per cent solution of tartaric acid, or an opiate in teaspoonful doses of the strength mentioned above. If these are without effect a powder containing, a quarter of a grain of sulphate of Zinc with half a grain of quinine and a few grains of sugar is often useful. Outward applications are helpful, a well made linseed 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 ways she must be changed. If weaning 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 exertion should be made to obtain a wetnurse; if this is impossible, all artificial methods of feeding demand a trial beginning with the simplest.

simplified and least complicated. Medicinally we may give in premature children small doses of pepsin, as for instance teaspoonful doses of a mixture containing fifteen grains of pepsin 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 teaspoonful 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 Rhubarb or mineral water may be given until the stools become regular or fruit in the form of apples baked or stewed, but simple enemata form 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, pepsin given as above is useful or teaspoonful doses of a half per cent solution of lactic acid or a one per cent. solution of hydrochloric or tartaric acid. Pain may be relieved by fomenting the abdomen or by administering an opiate as above with or without small doses of a one per cent. solution of tincture of cascarella in chronic cases. In any chronic form of dyspepsia with anæmia and vomiting, effervescent with iron are useful given after food. As a stomachic tonic we may give in chronic cases small doses of quinine or tincture of Cascarella. 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 recognised singly, and when 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.

Catastroph of the small intestine is the form most commonly met with in sucklings, especially amongst those who depend chiefly on artificial food. The cause is always or nearly always injudicious feeding in acute or long lasting dyspepsia in more chronic cases. It occurs often at the period of dentition, not that dentition is itself the cause but rather the change of diet which is so often made at this time when the intestines and their glands are undergoing developmental changes. Sometimes interference with the nutrition of the skin seems to be a disposing cause, as measles or eczema. Some attacks 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 copious, several evacuations occurring at one time with explosions of flatus after which relief follows.

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

Or the affection may be chronic, and then is either the result of successive acute attacks with remittances, going on for weeks, with great resulting emaciation, or it may be chronic throughout, beginning with occasional attacks of colic; and then we notice that the stools are occasionally fetid and copious, though at times seemingly natural and so escaping notice. The weight becomes stationary or decreases, the skin dry,
there is

there is atrophy of the muscles and emaciation, an old look comes over 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 intestines become atrophied, no absorption of nutriment can take place and death results.

In catarrh of the large intestine we meet with different conditions and symptoms. Here there is no colic and little or no wind is passed at stool: instead of meteorismus there is sinking in of the abdomen. There is always desire to go to stool, the motions are frequent but scanty and slimy 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 intestines become affected, there is a blending of the symptoms of both forms. Thus there are attacks of colic before some stools and not before others, flatus is expelled in quantity with some evacuations, at other times there is none: tenesmus following the passage of faeces may or may not occur. The motions are sometimes copious and watery, at other times scanty and slimy: in fact the characteristics of the two affections may occur singly or combined.

Either of these conditions may assume dangerous proportions and the child sink from exhaustion and this is the more to be feared when occurring in summer in children who are being weaned.

As complications we find dyspepsia, often the primary affection, coexisting 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 - arrowroot 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 intestine in one or other of the above forms. The extreme importance of giving

Giving every attention to the nourishment of infants cannot then be overestimated, for in this way we may frequently keep the child free from attacks and also by change of diet on the first appearance of suspicious symptoms often correct the evil. So in treating intestinal catarrh the first point to be attended to is the dietary which in almost every instance will require to be changed. If the infant is being weaned, it should be again placed at the breast, till the attacks subside and then weaning be recommenced more cautiously, taking care to avoid the food which was at fault in the first instance. If the child has been all along artificially fed, a wet nurse should if possible be obtained, failing that we must try the best substitutes in order. If the reaction of the stools is acid and the attacks slight, the addition of soda or lime water to the food will sometimes be sufficient. If the reaction is neutral or alkaline as in catarrh of the large intestine, we may give lactic or tartaric 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 intestines. Cocoa will in 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 products 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 or a drop of tincture of opium. An astringent as alum or the glycerin of lactic acid added to the water used with the irrigator will sometimes check the excessive secretion from the mucous membrane of the bowel. Vomiting may be relieved by Specacuan and effervescent, to which the addition of small doses of sulphate of iron may prove useful in stopping the watery secretion from the small intestine and diminishing the diarrhoea. When there is vomiting and copious stools, bismuth is an excellent remedy. Outward applications to the abdomen frequently

frequently give great relief, by relieving the pain and spasmodic action of the bowels, such as a large linseed poultice 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 binder of warm dry flannel. Spongiopiline wrung out of hot water and sprinkled with a few drops of opium or decoction of poppyhead is a good application, while a warm bath will often soothe & do good.

In all cases the rapidity with which change occurs in young children must be kept in mind and every fluctuation watched for and recognised. The necessity of studying the nutrition of young children, and the urgency for some improvement on our 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 be always 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 we do, we must endeavour to train ourselves to appreciate correctly the exact significance of the various little indications of disturbed function shown by the infant at every stage of its growth, and by patiently trying to inculcate scientific methods of regulating the nutrition and physical education of young children, based on physiological principles, break down the barrier to progress opposed by custom and nursery tradition.

But while we exercise due vigilance over the nutrition & feeding of infants we must not forget that other points have to be attended to with equal carefulness or the mischief which we are warding off in one direction will gain entrance in another and as certainly do harm.

Careful

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 every day life. From the first hours after their birth infants are the victims of nursery tradition and ignorance. Among the upper classes this is met with in the least degree, but the lower we descend in the social scale the more striking do we find the blind adherence to old wives 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 uterine cavity surrounded by an equable temperature and wrapped, as it were, in envelopes of cushiony softness, and then contrast with this the condition of the child an hour later when, after the necessary cleansing it is rolled tightly in band after band of wrappings, which compared with its recent coverings 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 unrestricting clothing, closely covering but not confining the movements of the different parts of the body. Let there be no tight binder or cold stiff linen garments, but let everything be of the finest & softest flannel fitting closely but not tightly round the child, and in the berceau 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 coating or changing from long to short clothes is not free from danger, and if it has to be done, let the infant have soft woollen stockings instead of short socks barely reaching above the ankle while the bare legs are kicked about without covering. 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 unprotected fontanelles. 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 greater part of the arms and legs, 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 though not heavily clothed. Many diseases of children such as affections of the lungs and bowels are in different cases due to insufficient covering of the body, and predispositions to disease are fostered. Turning from the clothing of the body during the day to the night and bed clothes, an infant or young child should always wear either alone or over cotton a night gown 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 pulling arms or legs out from under the bed clothes and sometimes the entire bed clothing is thrown off by the restless little sleeper, so the body clothing should be of flannel & reaching down to the feet. The clothes of the berceuse or cot should be warm but light, a little eider-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 is best situated in a corner protected from draughts between window, door and chimney. Except in extremely cold weather and during the first 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 at any rate fires should be interdicted. The child should not be heavily clothed but should never have a chance of feeling cold, and chest, 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, wherever it can be managed, there should be a day and night nursery and more than one adult ought never 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 sun when the children are rising. The room should be thoroughly ventilated without draught day and night. And here I may advert to the practice of accustoming children to go to sleep with a light always in the room; instead of lessening, it often causes nervousness and the habit once formed is difficult to break off: it must also not be forgotten that any burning 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 draughts. 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 wake early if 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 dinner 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 slumbers disturbed by dreams and awake unrefreshed 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 this particular we not only early inculcate good habits but avoid any unwounded 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 it than it deserves, is that children should be from their infancy accustomed to have the bowels 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 this function as inclination or discomfort prompts them. Consequently indigestion and intestinal troubles of various kinds are very liable to occur and

and may result in serious mischief. Irregularities in later life especially among women may in many cases be traced to careless ness and want of attention in childhood. By carefully watching the functions of the bowels, constipation or diarrhoea may be detected earlier and be more easily dealt with. More care might with advantage be bestowed by nurses and mothers on the skin 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 I think add to the child's chances of health by keeping the skin in a healthy condition, and not infrequently avoid skin affections. During the first few years of life the skin is, I believe, more sensitive and plays a more important part even than that in later life. How easily the skin of an infant chafes and becomes sore if subjected to very little irritation or exposure, is known by every nurse. The great frequency of skin eruptions, especially those of an eczematous nature, in infants of all classes but chiefly where they are dirty and ill-fed is familiar to the practitioners. 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 sugar in the urine in cases of extensive burn, showing how the balance of secretion & excretion is upset & the strain thrown on other organs when the skin is injured. I have also observed that after the healing of burns in young children superficial abscesses & furuncles are very frequently seen and give rise to considerable trouble. Children too in a much larger proportion than adults are subject to rashes & eruptions caused by or accompanying stomach derangement, and the process of dentition. 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 every 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 crust 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 & 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° & 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 rubber is often of great benefit in cases where there is any tendency to rickets or lateral curvature of the spine or where there is general deficiency of muscular tone. The tonic 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 & positive benefit to health. In girls the action of cold on the skin with the subsequent friction stimulates the activity of the circulation in the extremities, & may, in many cases be of use in avoiding or correcting menstrual irregularities. The use of warm and cold sitz baths for this purpose is well known. In very delicate children it is well to give some food as milk, 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. We cannot begin too early to accustom children to being out in the fresh air. In spite of the unfavourable nature of our climate,
 children

children should go out far more frequently than they do, and not only would constitutions be strengthened and hereditary disease warded off, but even acute attacks of illness would probably be less frequent among children if they were incured early to being constantly in the open air. If the weather is mild, the infant of a week old may be safely and with benefit 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 less 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 purpose. I refer to the perambulator: nothing can be more barbarous & senseless than the vehicle used in this country. Fixed in this with its face turned away from the nurse whose face it is always accustomed to be 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 cot of barbed wire on four wheels; this is provided with mattress, pillows and clothing and in it the child can lie at full length comfortably and kick 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. A hood keeps off rain & sun 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 if this form of carriage were adopted in England. Throughout childhood exercise in the open air must be insisted on & be regular. Delicacy need not be considered a bar to it 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 laryngitis, sore throats and chest ailments, while it predisposes to rickets, anaemia and glandular enlargements. All due precautions should of course be taken to have the body warmly clothed while the child is out of doors and older children should not be allowed to go out merely with a hat on and no additional clothing, while the feet should be warmly protected against cold and damp. Attention to the clothing of the feet in childhood is most important: hardly any children wear properly shaped boots adapted to the form of the foot. Shoemakers rarely regard the anatomical form of the foot, but aim rather at a neat & fashionable appearance than a correct shape. Ample allowance should be made for the breadth of the foot from the ball 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 toes to expand during walking and the child is enabled to walk, as it ~~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 inwards and all the toes together and favour the formation of corns and bunions and in growing toe nails. High heels placed forwards 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 regularly exercising the muscles, in fact by a species of gymnastics, where

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there is lateral curvature with deficient volume & power in the muscles of the side or where we find on examination 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 & development of the thorax, in cases of partial paralysis or merely lack of vigour in the muscular system, even in young children gymnastic exercises are a great aid. In young children the nurse should be instructed to move the limbs regularly and methodically, thus the arms may be extended, raised from the side and carried backwards so as to throw the shoulders back and the chest forwards: or the extended arms should be carried above the head held there for a moment and then thrown back and brought down to the sides. In this way the walls of the chest are expanded, the muscles of the thorax stimulated and the lungs inflated. In cases of lateral curvature of the spine, the arm on the side of the concavity should be raised above the head & crossed behind the head so as to aid in straightening the spine expanding the wall 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 straightening action may be increased, though chiefly indirectly by strengthening the muscles of the weak side. As the child grows older and is able to do things itself under instruction, the same exercises 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 drilling and gymnastics are great aids to healthy corporal development and a positive means of cure in the forms of disease I have mentioned, namely rickets, lateral curvature of the spine, tendency to or actual lung disease with flattened unexpanded chest and stooping shoulders. The exercises need not be intrusive to children, by a little judicious management games may be devised bringing in the required

gymnastics

Gymnastics 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 germs of much future ill health and wretchedness in adult life may be implanted and fostered. Let the adult do what he will to injure his bodily vigour 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 Guillemand.

No 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 Monti, lectures on diseases of children at the General Polyclinic at Vienna.

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