

than to prove the qualitative proportions. The quantity of a milk-secretion may be ascertained by weighing the child both before and after nursing, by which it should always be found to have increased from three to five ounces. But, as these weighings are troublesome, and not very much liked in private practice, simply watching the child while it nurses will serve to inform us whether the nurse has sufficient milk or not. If the child does not exert itself very much at it; if the milk runs out at the angles of the mouth; and if, after half an hour, it quietly and contentedly forsakes the breast, one may be convinced that it has obtained a sufficient quantity of milk.

If, now, one has had the rare luck to find a wet-nurse answering in every respect, the following precautions are to be taken to preserve her future good health. Warm baths are, for persons from the lower ranks of society, something so rare and unusual, that it does not seem advisable to allow the wet-nurse to take whole baths at once; it is best to have her take several parts of baths in the week; warm water, with soap and good-will, will accomplish a tolerable degree of cleanliness. If the wet-nurse has been used to warm-water baths before, they will also be harmless to her during lactation. The same holds good with river and cold sea baths. The rule should always be adhered to, not to alter the habits and manner of living of the wet-nurse, if it is only possible to carry them out in conjunction with a sensible house *régime*. The wet-nurse may partake of *every thing*, with the exception of highly-spiced and very salty food and alcoholic drinks, that is palatable to her; and it is always best, if her manner of living, a couple of between-meals excepted, does not deviate from those of the family in which she has come to live. All her dishes must be well prepared and suitable to her taste; for the rest, it is really superfluous to ordain a detailed bill-of-fare.

Her sleeping-room should be well ventilated, and she herself must, without regard to the weather, take daily exercise in the fresh air; it is only necessary to observe here, that, if she is not well and long known, she should never be allowed to go out alone.

A great prejudice exists in the public mind against menstruating wet-nurses, and a few spots of blood upon their linen suffice to cause the parents of the nursling the greatest anxiety. The danger, however, is not so great by far as it appears; most wet-nurses menstruate but feebly and irregularly, and although during the catamenial flow they have usually somewhat less milk, and although the children at this time, it is true, may be seized with colic pains, yet, in from one to three days, the whole process is over, and wet-nurse and nursling again enjoy the best of health.

Two principles must be maintained and daily inculcated:

(1.) The breast is no quieting remedy for the crying child, but it is only to be given to it regularly every two or three hours. Any restlessness that occurs during these intervals is no sign that the child is hungry, but will be found to be due to some other cause; frequently to tight dressing, wet diapers, or the like. In the night a four hours' pause, for instance, from nine in the evening to one in the morning, suffices completely to allow the wet-nurse to enjoy the first half of the night's rest. The advice of some Pædiatricars, not to put the child to the nurse's breast from evening till morning, I have not yet been able to carry out.

(2.) The wet-nurse should never be allowed to keep the child with her in bed. I am convinced that many of the mysterious sudden deaths of nurslings are to be explained by suffocation in the bed of the mother or wet-nurse. The nurses fall asleep while suckling the child, and either suffocate it by themselves or by the bedclothes falling upon it. A cautious mother should, therefore, never begrudge herself the trouble to look after the wet-nurse several times a night and insist with the utmost firmness upon the latter's carrying out this rule.

Many wet-nurses suffer from obstinate constipation, and, by hiding the evil, ultimately bring upon themselves actual digestive disturbances. They should therefore be instructed not to neglect it, but immediately to inform the parents of the child of it; the cure is very simple, for the entire trouble may be removed by a few drachms of conf. sennæ or boiled prunes.

The wet-nurse ought to be treated with sympathy, and in a friendly manner; the poor creatures are heartily to be pitied, notwithstanding their high wages, who, by their own fault, it is true, get so far as to give away their own child, and in its place take a stranger's to their breast; such a service, if regarded in its true light, cannot be paid with money.

Finally, the question arises, When and how should the child be weaned?

The answer for this question but rarely depends upon the opinion of the physician alone; usually a number of external causes, or regard for the health of the wet-nurse or of the child, influence the determination of the period for weaning. Here, too, as unfortunately in so many other things in the practice of medicine, the affair cannot be disposed of with a few *numbers*; many circumstances must be placed opposite each other, and carefully weighed. The most natural is manifest, to allow the child to nurse so long as it readily takes the breast, thrives upon it, and the wet-nurse does not suffer therefrom the least prejudicial effects in her health, such as weakness, pallor, emaci-

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ation, hyperæsthesia, etc. This condition in a healthy nurse and a strong child lasts, in our climate, on an average, from four to eight months. Then the nurse perceives that the secretion of milk does not increase in comparison to the increasing growth of the appetite of the child, and consequently the nursling does not obtain sufficient nutriment. Now the period has arrived when the child may be allowed other nutriments besides the breast. Here, too, it is difficult to say whether this or that article of food is the most appropriate, and the rest injurious, for all children have not the same power of digestion and the same taste; some, for instance, will take no cow's milk, nor any thing prepared with it, so long as they get the breast, if it is only once a day, while they will take the various beef-broths without much objection; others will take no meal-porridge, but only cracker-soup; while still others will partake of no kind of milk preparations, but only of beef-broths, etc., etc. I therefore cause the commencement to be made with a thin fresh bread-and-milk preparation; if in eight days this does not succeed, I try meal-porridge; and if this is also unacceptable, then I resort to thin beef-broth and bread. Some one of these three preparations will be tolerated by every child if the breast of the wet-nurse is incapable of supplying sufficient nutriment. For four weeks the child gets one mess a day; for four weeks more, two; and for four weeks more, three times daily. In the mean time the child has learned to masticate the crust of white bread and to drink water, takes the breast but once during the night, and does not miss it very much when finally at night it gets lukewarm cow's milk in its stead.

This is the surest and safest method of weaning a child. Often enough it has to lose the wet-nurse at once, or in a very short time. In that case it is especially important to take into consideration the dentition periods. If the child has happily just passed through a dentition period, so that it may be assumed with certainty that it will be free from the troubles of dentition during the coming weeks, then, in most cases, it will also bear the sudden weaning without any danger; but, on the other hand, a profuse diarrhoea comes on in most cases, which often cannot be arrested, or from the effects of which, at least, children suffer for months. As soon as a child has cut its upper and lower incisor teeth, Nature has assigned to it more solid food than the milk of its mother. At any rate, it is useless, and, for most mothers injurious, to suckle their children beyond the first year. In most instances they then wean themselves, because they do not obtain a sufficient quantity of milk from the breast at one time. I once treated an American lady, who still suckled her son who was *two and a half years old*, till one morning, when the strongly-devel-

oped, robust child was called to be nursed, he very kindly replied: "I thank you, dear mamma, the nursing is too tedious for me!"

If the mother herself is unable to suckle, and has not the means wherewith to hire a wet-nurse, there is no other alternative than to try *artificial feeding*.

The following conditions are requisite for an artificial rearing. Care in the selection and preparation of the nutriments, great patience and perseverance, the strictest accuracy, manual dexterity, and the highest degree of cleanliness.

The best substitute for woman's milk is cow's milk, not because it resembles it most in composition, but because it can be obtained most regularly and easily at a low price. Those only who have devoted some time to the quantitative examination of milk will be able to agree with me that the few per cents. more of casein and butter, and the few per cents. less of milk-sugar alone, cannot make the great difference which certainly exists between the nourishing of a child with woman's milk and cow's milk. Indeed, the secretion of the mammary glands, like that of the kidneys, has tolerably wide physiological boundaries, out of which some really fine medium numbers may be constructed. But, nevertheless, it does not follow from these averages that that milk is the best which stands nearest to the physiological average.

The important difference between woman's and cow's milk is, as already observed above, to be found in this, that the casein of woman's milk curdles in the stomach into small light flakes, forming a very loose jelly, while that of cow's milk coagulates into large, compact lumps, of which one may convince himself by causing a child brought up at the breast, and one artificially reared, to vomit a quarter or half an hour after the meal. This is easily accomplished by rapidly moving the child about, by frictions over its gastric region, etc. The loose flakes of the woman's milk are easily digested and assimilated; the firm lumps of casein of the cow's milk, the infantile gastric juice is incapable of dissolving, they are thrown up again or wander through the whole intestinal canal as large, sour, undigested masses, irritating it in its entire length. Hence it all depends upon our ability of depriving the casein of cow's milk of this property, and that in a great measure may be accomplished by rendering it slightly more alkaline. For this purpose I have been in the habit of using for some time back a solution of carbonate of soda (3j to water $\frac{3}{4}$ vj), a teaspoonful of which is added to the milk at every meal. When the milk is boiled into a mess or porridge, I cause the solution to be added to the cold milk, and in summer the entire quantity of milk to be consumed in the twenty-four hours should be rendered

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alkaline immediately upon its arrival at the house, by adding a table-spoonful of the solution to every five ounces of milk. For very young children I cause, in addition, one-third of water and as much milk-sugar as can be taken upon the point of a knife to be added at every meal; children over three months old drink cow's milk as it is, but always with the addition of the carbonate. I have seen dozens of children brought up upon milk thus prepared, and the majority have experienced no digestive derangements whatever. If the parents are sensible, they will abstain from giving the child *all* other kinds of food but this milk for the first three months, and at the beginning of the fourth month *one* other mess a day only may be allowed. The milk should be boiled immediately upon its arrival at the house, because the curdling is thereby delayed for some time. The best mess is prepared by soaking about an ounce of stale wheat bread for fifteen minutes in some cold water, when the water will be found to be slightly acid; the bread is then boiled into a uniform broth with six to eight ounces of alkaline milk, to which as much milk-sugar is added as can be taken upon the point of a knife. Meal-porridge is much preferred to this preparation, especially among the lower classes, for upon this, too, a great number of children thrive excellently well, and it is yet a question whether this preparation is not as harmless as the bread-jam. When four-fifths of the children brought up by hand get meal-porridge, and only one-fifth bread-mess, then, in assumed equal digestibility of both nutriments, four children fed upon meal porridge ought to suffer from indigestion before one child fed upon the bread-mess finally becomes sick.

Now, whoever is not aware that actually four times as many children eat meal-porridge as eat bread-jam, very naturally must form the idea that the former is by far less favorably tolerated than the latter. But until detailed statistical tables, conducted for years, demonstrate this circumstance in clear indisputable numbers, no one can maintain that thin meal-porridge is more injurious than bread. In addition to the ordinary wheat-flour, rice-flour or arrow-root may also be employed. The method of using arrow-root is as follows: A teaspoonful of arrow-root is put into a porcelain vessel, as much cold water is added to it as will make it a fine dough, a cupful of boiling milk (or also water, or beef-tea) is then added, the mixture is stirred a little and allowed to boil for a few minutes till the whole acquires the consistency of a fine light jelly.

By far the most rational of all substitutes for the mother's milk is undoubtedly the so-called *Liebig's* soup, by which the great chemist has rendered an everlasting service to the Pædiatrica. As is well known, we find:

	Blood-forming material.	Caloric-generating material.
In woman's milk	1	3.8
" cow's milk, fresh	1	3.0
" cow's milk, skimmed	1	2.5
" wheat-flour	1	5.0

A mixture of wheat-flour and cow's milk may therefore be easily produced that will present the same proportions of blood-forming and caloric-generating component parts as human milk; wheat-flour, however, reacts acid, and contains much less alkali than woman's milk, less than is requisite for the formation of normal blood, and, finally, a totally unnecessary labor, the conversion of the starch-flour into sugar, is imposed upon the infantile organism. It is, therefore, desirable first of all to convert the starch-flour to the soluble form of sugar and dextrine; this is easily accomplished by the addition of *malt-meal* to the wheat-flour. When milk and wheat-flour are boiled into a thick soup, and malt-meal is added to this still hot soup, the mixture in *a few minutes becomes liquid and acquires a sweet taste*; upon this and upon an addition of an alkali in order to neutralize the acid reaction of the wheat-flour is based the formation of *Liebig's* soup.

The method prescribed by Liebig himself is as follows: "Half an ounce of wheat-flour, half an ounce of malt-meal, and seven and a half grains of bicarbonate of potassa, are weighed off; they are first mixed by themselves, then with the addition of one ounce of water, and lastly, of five ounces of milk; the mixture is then heated upon a slow fire, constantly stirring it until it begins to get thick; at this period the vessel is removed from the fire, and the mixture is stirred for five minutes, is again heated, and again removed when it gets thick, and, lastly, it is heated till it boils. The soup is purified from bran by passing it through a fine sieve (piece of fine linen), and now it is ready for use. Barley-malt can be obtained at any brewery. First, it is separated from the impurities, and then ground in an ordinary coffee-mill to a coarse meal. Care should be taken to use the common, fresh wheat-flour, *not the finest*, because it is richer in starch-flour. Two parts of kali bicarb. crystal are dissolved in eleven parts of water, which will make a perfectly clear liquid. The troublesome weighing of the materials may be dispensed with, as a heaped tablespoonful of wheat-flour weighs pretty nearly half an ounce, a like tablespoonful of malt-meal, not quite so heaped, likewise weighs half an ounce, and an ordinary thimble filled with the solution of the bicarbonate contains nearly fifteen grains of the salt. Now, if in addition one ounce and five ounces of water are caused to be weighed off in a beaker-glass by the druggist, and the height of the fluids is marked by strips of paper

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pasted on the outside, then every thing is conveniently arranged for a sensible mother; the bicarbonate of potassa cannot be replaced by the bicarbonate of soda, as important potassa salts enter into the conformation of all our food, the milk and blood-corpuscles. The soup thus prepared tastes tolerably sweet, and, when properly diluted with water, is tolerated even by nurslings. This soup, according to my own experience and that of many German physicians, is the best substitute for the mother's milk, and has visibly saved the life of many totally-atrophied children.

The greatest difficulty in large cities will always be the procuring of fresh, unadulterated milk. The milk obtained from general dealers is always far from being satisfactory, and it is absolutely necessary for one to be present at the milking and feeding of the cow, until he has become satisfactorily convinced of the honest dealings of his milk-purveyor. The milk used should always be from the same cow, which should be allowed to roam in the free air several hours daily, and be fed almost wholly upon green fodder.

If, on account of existing unfavorable circumstances, it is impossible to obtain such cow's milk for the child, other substances must be substituted, the usefulness of which, however, when employed for a long time, is very problematical. Here belong veal-broth with yolk of eggs, gruels, salep, and carrot-broth. The latter has been very favorably spoken of, and is prepared in the following manner: One ounce of triturated yellow carrots is mixed with six to eight ounces of water and allowed to stand for twelve hours; the mixture is then pressed out through a cloth. The juice is mixed with pulverized wheat bread (one part bread to four parts juice), and boiled for a few minutes over a slow fire, and finally is sweetened with a little sugar. There are children who, under no circumstances, tolerate cow's milk. These can exist for months upon carrot-broth, mucilaginous or beef soups with yolk of eggs; they grow, however, but very slowly, and never acquire a proper amount of flesh; a trial must therefore be made with very fresh, sweet milk; often the absorption and assimilation of the milk succeed later, though at first it was not tolerated at all.

The manner in which the nutriment is to be administered to infants is not immaterial. They may be fed, from the very first day of life on, with a small spoon, or a cup having a snout, to which they readily habituate themselves, but it is better to use a sucking-bottle, because by this the facial muscles are exercised in an equal manner, as in children at the breast of the mother.

The simplest form of sucking-glasses is a common bottle of four to five ounce capacity, with a tolerably narrow neck, upon the mouth of which several finely-cut bits of delicate sponge are secured by a

piece of gauze. These sponges should be changed several times daily, and are best preserved in pure cold water. When they are made to reach half an inch over the neck of the bottle, and if the gauze is made properly tense, they will imitate the form and consistence of the nipple.

If these sponges are not good or elegant enough, the bottles may be provided with mouth-pieces of gold, silver, tin, or bone. Children drink very readily out of the perforated caoutchouc caps which lately have become so popular, and which are especially recommendable on account of their cleanliness.

A very popular method of feeding infants is by the sugar-teat (Schnuller, Zulp). It is prepared by mixing pulverized sugar-crackers with milk or water so as to form a dough, which is then put into a linen rag and tied with a string so as to form a ball about the size of a small apple. This soft, sweet ball is put into the mouth of the child, when it cannot be quieted by the ordinary means, at which it instantly begins to suck, and thus may be kept quiet for hours. In general, nothing more can be said against cleanly-kept, often-renewed sugar-teats, than that the cheeks of the child, by the constant sucking, become enormously distended, and form disgusting protuberances when the mouth is closed without them. Usually, however, the contents of the rag, from its contact with the warm mouth, soon begin to ferment, the mucus of the mouth becomes acid, and directly upon that digestive disturbances supervene, and a fungous growth springs up upon the mucous membrane of the mouth, which only too often leads to a sorrowful end. It is therefore the duty of every physician to prohibit the use of the sugar-teat whenever and wherever possible; but this, in fact, can be more easily advised than accomplished; if we only think of the condition of a poor woman who all day long is plagued by a large number of small children, and at night, when she and the rest of the members of the family absolutely require rest, the crying child will not leave her arm. She will then certainly say, "The physician gives good advice, not to use the sugar-teat; he, however, is not obliged to carry this crying child about all through the night;" thus not one woman out of a hundred will withhold it from her child.

From the lower classes it will hardly ever be possible to eradicate this fermenting ball, and among the better classes the child has a wet-nurse, or at least proper care, and the sugar-teat is renewed often enough, whereby it is generally rendered harmless.—So much for the nutrition of the first year of life.

In the second year, the children may be allowed some soft, finely-cut meat. If they have no diarrhoea, nor are predisposed to it, they

tolerate fresh ripe fruit excellently well; on the other hand, boiled green vegetables and husk fruits very generally cause them indigestion. For a child two years of age, for example, I prescribe the following diet: Mornings, between six and seven o'clock in summer, or between seven and eight in winter, milk-gruel; between nine and ten o'clock, a piece of wheat bread with very little butter on it; twelve o'clock, well-prepared beef soup, meat with a little gravy, or potato-broth, or in place of the meat a meal-broth prepared with eggs, but with very little fat, green vegetables very rarely and in very small quantities; afternoon, between three and four, bread and milk, in summer, bread with fruit; evening, at seven, beef-soup or milk-broth. Sugar, in general, agrees very badly with children, and it is highly important for their digestion to habituate them to it as little as possible. After the children have passed the third year they tolerate all kinds of vegetables, and may, when otherwise well brought up, very appropriately be allowed to eat at the table with the family; it is only necessary to refuse them very salt, sour, and highly-spiced victuals, of all others they may partake in moderate quantities. Children should not be allowed to taste wine till they are fourteen years old, even beer is absolutely unnecessary, as likewise are tea and coffee. Home-made rye bread should be substituted for the ordinary wheat bread. It is well to cause children to eat the entire meal off one plate. They should consume all the soup allowed them before they can obtain any thing from the next dish. Aside from the labor saved by not repeatedly changing the plates, children thereby acquire the good qualification of learning to eat every thing, and not to become lickerish.

If we now take up the *care* of children, we encounter, first of all, the *culture* of the skin. The vernix caseosa of the foetus cannot be washed off with water, but must first be mixed with some kind of fat, butter, lard, or pure oil, and may then be readily wiped off with a soft cloth. Infants should be bathed daily for ten minutes, in water of 92° F. Local affections do not suffice to counteract this rule; but, in general febrile diseases, the bathing must be suspended. The stay in the water and the variations of the temperature, which in the undressing and in the rubbing of the children dry cannot be avoided, increase, as a rule, the heat of the skin and induce a higher degree of weakness.

After the first incisors have cut through, the temperature of the water may be gradually reduced to 86° F. In the first year of life it is not advisable to employ cooler baths. In the second year, when the children have less frequent movements from their bowels, and they begin to get cleanly, it is no more necessary to bathe them every day,

three or four baths a week, in water of 84° or 85° F., are sufficient. From the third year on, two or three baths weekly, in summer, daily river or sea baths, will keep the skin properly active.

Children should be taught the art of swimming; it is very useful and very invigorating to the health of both sexes. The *culture* of the skin not only requires cleanliness, but also the prevention of too great changes of its temperature, and this is accomplished by garments and warming.

At the first dressing of the new-born, attention should be paid (1.) to the umbilical cord, that it is in no way dragged upon; (2.) That the chest and abdomen are wrapped in such garments as will not hinder the respiratory acts that have but just been established; and (3.) That the upper and lower extremities are allowed to assume their natural flexions. No child should be carried about upright, until it is itself able to raise its head and rotate it a little. The physician should be very cautious in advising that the child should be inured by the aid of light garments. It certainly cannot be denied that children inured in early life develop more rapidly and stronger, are seldom ill, and readily surmount a disease they may have acquired; on the other hand, however, it must also be admitted that many intestinal and pulmonary affections of children have been induced by a too rapid change in the temperature or by insufficient covering of the breast and abdomen. When the anxious parents have at last been prevailed upon to resort to the inuring method, and the child subsequently falls sick, the bitterest reproaches, and not unjustly, will be heaped upon the physician. I therefore always resort to the expedient, never to disparage light garments wherever I meet with them, nor to absolutely insist upon them. Neither can unreasonable excesses of too warm or too cold garments be tolerated. When children learn to walk, they should have shoes with tolerably broad soles, which should be at least half an inch larger than the foot. Vain mothers begin at a very early period to direct their attention to the formation of a slender waist for their little daughters, which of course cannot be prevented in many cases; for motherly vanity is a vexatious enemy to the rational physician.

Finally, as regards the nursery-room, the child in the first eight days of its existence should be kept in a half-dark room, which is gradually allowed to become brighter, till finally, after fourteen days, the young eyes are perfectly accustomed to the light, and may be exposed to it without harm. From this time forth the nursery should be bright; it should have at least two windows, the floor should be painted or covered with oil-cloth, so that no water should permeate it, and the stove should only be used for heating the room and not for cooking-purposes. For the purpose of thoroughly ventilating the

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room the windows should be kept open one half or one hour daily, during which time the child, of course, is to be removed to another room. Fresh air is undoubtedly an absolute necessity for a robust development. Children born in summer should be taken out in the air from the second or third day on; in winter, however, eight or ten weeks at least should be allowed to pass by before they can be carried out on a sunny noontday. Older children can never be out too much in the fresh air; the earlier they are sent out, and the later in the day they are called in, all the better do they develop. In cities, the physician therefore finds it necessary to insist with the utmost energy that families should hire themselves gardens or shady grass-plots, where children may remain undisturbed the entire day. The promenades in public places, so much in favor with the nursery-maids, cannot in any way replace the undisturbed enjoyment of the child in a private park.

PART II.

SPECIAL SUBJECTS.

CHAPTER I.

DISEASES ORIGINATING DIRECTLY IN CONSEQUENCE OF DELIVERY.

ALTHOUGH, in a discussion on the diseases of children, it appears perfectly conformable with the purpose to adopt the plan of the latest works on Special Pathology, to simply take up the diseases of one part of the body after another, and not to base the classification upon the nature of the pathological alterations, still in the "Pædiatrica" we meet with a class of affections which have a definite physiological connection, and therefore must also be jointly treated of before all others. It is those diseases which are indebted for their origin to the act of the delivery, and to the transposition of the child from the uterus into the atmospheric air alone. Here belong: (A) Asphyxia of the new-born; (B) Atelectasis of the lungs; (C) Cephalæmatoma of the new-born; (D) The pathological conditions of navel; (E) Trismus neonatorum; (F) Sclerema; (G) Melæna; (H) Icterus of the new-born, and (I) Ophthalmoblenorrhœa of the new-born.

A.—ASPHYXIA NEONATORUM.

SYNCOPE of the new-born, or asphyxia (from *a* privativum and *σφίσις*, the pulse), is a condition in which the inspiratory muscles after the delivery do not contract at all, or only imperfectly, and the breathing therefore does not commence. The movements of the heart continue here tolerably rhythmical, although they are feeble and not always perceptible, and only heard on auscultation; the name asphyxia does not, therefore, seem to have been very happily selected for this affection. Two different forms of asphyxia are distinguished in the new-born; in the one form the children are cyanotic, usually they are very large and strongly developed, the integument is infiltrated, the tongue