

which time she may also be permitted to take a drive. If it be borne in mind that it takes from six weeks to two months for the uterus to regain its natural size, the reason for prolonged rest will be obvious. The judicious practitioner, however, while insisting on this point, will take measures at the same time not to allow the patient to lapse into the habits of an invalid, or to give the necessary rest the semblance of disease.

**Subsequent Treatment.**—Toward the termination of the puerperal month some slight tonic, such as small doses of quinine with phosphoric acid, may be often given with advantage, especially if convalescence be tardy. Nothing is so beneficial in restoring the patient to her usual health as change of air, and in the upper classes a short visit to the seaside may generally be recommended, with the certainty of much benefit.

## CHAPTER II.

### MANAGEMENT OF THE INFANT, LACTATION, ETC.

**Commencement of Respiration.**—Almost immediately after its expulsion, a healthy child cries aloud, thereby showing that respiration is established, and this may be taken as a signal of its safety. The first respiratory movements are excited, partially by reflex action resulting from the contact of the cold external air with the cutaneous nerves, and partly by the direct irritation of the medulla oblongata, in consequence of the circulation through it of blood no longer oxygenated in the placenta.

**Apparent Death of the Newborn Child.**—Not unfrequently the child is born in an apparently lifeless state. This is especially likely to be the case when the second stage of labor has been unduly prolonged, so that the head has been subjected to long-continued pressure. The utero-placental circulation is also apt to be injuriously interfered with before the birth of the child when a tardy labor has produced tonic contraction of the uterus, and consequent closure of the uterine sinuses; or, more rarely, from such causes as the injudicious administration of ergot, premature separation of the placenta, or compression of the umbilical cord. In any of these cases it is probable that the arrest of the utero-placental circulation induces attempts at inspiration, which are necessarily fruitless, since air cannot reach the lungs, and the foetus may die asphyxiated; the existence of the respiratory movement being proved on post-mortem examination by the presence in the lungs of liquor amnii, mucus, and meconium, and by the extravasation of blood from the rupture of their engorged vessels.

In most cases, when the child is born in a state of apparent asphyxia, its face is swollen and of a dark livid color. It not infrequently

makes one or two feeble and gasping efforts at respiration without any definite cry; on auscultation the heart may be heard to beat weakly and slowly. Under such circumstances there is a fair hope of its recovery. In other cases the child, instead of being turgid and livid in the face, is pale, with flaccid limbs, and no appreciable cardiac action; then the prognosis is much more unfavorable.

**Treatment of Apparent Death.**—No time should be lost in endeavoring to excite respiration, and, at first, this must be done by applying suitable stimulants to the cutaneous nerves, in the hope of exciting reflex action. The cord should be at once tied, and the child removed from the mother; for the final uterine contractions have so completely arrested the utero-placental circulation as to render it no longer of any value. If the face be very livid, a few drops of blood may with advantage be allowed to flow from the cord before it is tied, with the view of relieving the embarrassed circulation. Very often some slight stimulus, such as one or two sharp slaps on the thorax, or rapidly rubbing the body with brandy poured into the palms of the hands, will suffice to induce respiration. Failing this, nothing acts so well as the sudden and instantaneous application of heat and cold. For this purpose extremely hot water is placed in one basin, and quite cold water in another. Taking the child by the shoulders and legs, it should be dipped for a single moment into the hot water, and then into the cold; and these alternate applications may be repeated once or twice, as occasion requires. The effect of this measure is often very marked, and I have frequently seen it succeed when prolonged efforts at artificial respiration have been made in vain.

If these means fail, an endeavor must be at once made to carry on respiration artificially. The best means of doing this have been exhaustively studied by Dr. Champneys,<sup>1</sup> who considers the only two reliable means of carrying on artificial respiration are those of Schultze and Sylvester. The Sylvester method is, on the whole, that which is most easily applied, and, on account of the compressibility of the thorax, it is peculiarly suitable for infants. The child being laid on its back, with the shoulders slightly elevated and the feet held in an elongated position by an assistant, the elbows are grasped by the operator, and alternately raised above the head, and slowly depressed against the sides of the thorax, being at the same time everted, so as to produce the effect of inspiration and expiration. In Schultze's method the child is grasped on either side of the thorax, the operator's thumbs being anterior, the index fingers being in the axillæ, and the remaining fingers on the child's back. The operator's arms are now stretched out so that the child hangs at arm's length between his knees. By this means the chest is expanded, and inspiratory movements are produced. The operator's arms are now swung upward until they are horizontal. This causes the child's body to be flexed, its head is directed downward, and its legs fall toward the operator until the weight of its body rests on his thumbs. By this means its thorax and abdomen are compressed, its diaphragm is forced upward, and expira-

<sup>1</sup> Medico-Chir. Trans., vol. lxxiv. pp. 41, 87, and vol. lxxv. p. 75.



tion results. If now the child be again swung into its former position, inspiration follows.

Other means of exciting respiration have been recommended. One of them, much used abroad, is the artificial insufflation of the lungs by means of a flexible catheter guided into the glottis, or by placing a handkerchief over the child's mouth and directly insufflating the lungs. It is not difficult to pass the end of a catheter into the glottis, using the little finger as a guide; and once in position, it may be used to blow air gently into the lungs, which is expelled by compression on the thorax, the insufflation being repeated at short intervals of about ten seconds. One advantage of this plan is that it allows the liquor amnii and other fluids, which may have been drawn into the lungs in the premature efforts at respiration before birth, to be sucked up into the catheter, and so removed from the lungs. Dr. Champneys recommends that when the catheter is passed into the trachea for about three inches from the child's mouth, the thorax should be gently compressed, and then air should be blown through the catheter. The effect of this manœuvre is that any mucus or fluids in the trachea pass upward through the glottis into the pharynx. The same effect may be produced, but less perfectly, by placing the hand over the nostrils of the child, blowing into its mouth, and immediately afterward compressing the thorax. One of these methods should certainly be tried if all other means have failed. Faradization along the course of the phrenic nerve is a promising means of inducing respiration, which should be used if the proper apparatus can be procured. Encouragement to persevere in our endeavors to resuscitate the child may be derived from the numerous authenticated instances of success after the lapse of a considerable time, even of an hour or more. As long as the cardiac pulsations continue, however feebly, there is no reason to despair, and Champneys has collected some apparently authenticated cases in which children seemingly dead have been buried for some hours and then dug up and restored to life.

**Washing and Dressing of the Child.**—When the child cries lustily from the first, it is customary for the nurse to wash and dress it as soon as her immediate attendance on the mother is no longer required. For this purpose it is placed in a bath of warm water, and carefully soaped and sponged from head to foot. With the view of facilitating the removal of the unctuous material with which it is covered, it is usual to anoint it with cold cream or olive oil, which is washed off in the bath. Nurses are apt to use undue roughness in endeavoring to remove every particle of the vernix caseosa, small portions of which are often firmly adherent. This mistake should be avoided, as these particles will soon dry up and become spontaneously detached. The cord is generally wrapped in a small piece of charred linen, which is supposed to have some slight antiseptic property, and this is renewed from day to day until the cord has withered and separated. This generally occurs within a week; and a small pad of soft linen is then placed over the umbilicus, and supported by a flannel belly-band placed around the abdomen, which should not be too tight,

for fear of embarrassing the respiration. By this means the tendency to umbilical hernia is prevented.

The clothing of the infant varies according to fashion and the circumstances of the parents. The important points to bear in mind are that it should be warm (since newly-born children are extremely susceptible to cold), and at the same time light and sufficiently loose to allow free play to the limbs and thorax. All tight bandaging and swaddling, such as is so common in some parts of the Continent, should be avoided, and the clothes should be fastened by strings or by sewing, no pins being used. At the present day it is customary not to use caps, so that the head may be kept cool. The utmost possible attention should be paid to cleanliness, and the child should be regularly bathed in tepid water, at first once daily, and after the first few weeks, both night and morning. After drying, the flexures of the thighs and arms, and the nates, should be dusted with violet powder or fuller's earth, to prevent chafing of the skin. The excrements should be received in napkins wrapped around the hips, and great care is required to change the napkins as often as they are wet or soiled, otherwise troublesome irritation will arise. A neglect of this precaution, and the washing of the napkins with coarse soap or soda, are among the principal causes of the eruptions and excoriations so common in badly-cared-for children. When washed and dressed the child may be placed in its cradle, and covered with soft blankets or an eider-down quilt.

As soon as the mother has rested a little, it is advisable to place the child to the breast. This is useful to the mother by favoring uterine contraction. Even now there is in the breasts a variable quantity of the peculiar fluid known as *colostrum*. This is a viscid yellowish secretion, different in appearance from the thin bluish milk which is subsequently formed. Examined under the microscope it is found to contain some milk-globules and a number of large granular and small fat corpuscles. It has a purgative property, and soon produces, with less irritation than any of the laxatives so generally used, a discharge of the meconium with which the bowels are loaded. Hence the accoucheur should prohibit the common practice of administering castor oil, or other aperient, within the first few days after birth, although there can be no objection to it in special cases, if the bowels appear to act inefficiently and with difficulty.

**Over-frequent Suckling should be Avoided.**—For the first few days, and until the secretion of milk is thoroughly established, the child should be put to the breast at long intervals only. Constant attempts at suckling an empty breast lead to nothing but disappointment, both to the mother and child, and, by unduly irritating the mamme, sometimes do positive harm. Therefore, for the first day or two, it is sufficient if the child be applied to the breast twice, or at most three times, in the twenty-four hours. Nor is it necessary to be apprehensive, as many mothers naturally are, that the child will suffer from want of food. A few spoonfuls of milk and water being given from time to time, the child may generally wait without injury until the milk is secreted. This is generally about the third day, when the



secretion is found to be a whitish fluid, more watery in appearance than cow's milk, and showing under the microscope an abundance of minute spherical globules, refracting light strongly, which are abundant in proportion to the quality of the milk. A certain number of granular corpuscles may also be observed shortly after the birth of the child, but after the first month these should have almost or altogether disappeared. The reaction of human milk is decidedly alkaline, and the taste much sweeter than that of cow's milk.

The importance to the mother of nursing her own child, whenever her health permits, on account of the favorable influence of lactation in promoting a proper involution of the uterus, has already been insisted on. Unless there be some positive contra-indication, such as a marked strumous cachexia, an hereditary phthisical tendency, or great general debility, it is the duty of the accoucheur to urge the mother to attempt lactation, even if it be not carried on more than a month or two. It is, however, the fact that in the upper classes of society a large number of patients are unable to nurse, even though willing and anxious to do so. In some there is hardly any lacteal secretion at all, in others there is at first an over-abundance of watery and in-nutritious milk, which floods the breasts and soon dies away altogether. Something analogous to this result of breeding and culture is observed in the lower animals. Thus in the so-called "pedigree" cattle, the cow is never able to nurse its calf; and the same is observed, though less constantly, in thoroughbred racing stock.

**When the Mother cannot Nurse, a Wet-nurse should be Procured.**—Whenever the mother cannot or will not nurse, the question will arise as to the method of bringing up the child. From many causes there is an increasing tendency to resort to bottle-feeding, instead of procuring the services of a wet-nurse, even when the question of expense does not come into consideration. No long experience is required to prove that hand-feeding is a bad and imperfect substitute for Nature's mode, and one which the practitioner should discourage whenever it lies in his power to do so. It is true that, in many cases, bottle-fed children do well; but there is good reason to believe that, even when apparently most successful, the children are not so strong in after life as they would have been had they been brought up at the breast. When, in addition, it is borne in mind how much of the success of hand-feeding depends on intelligent care on the part of the nurse, what evils are apt to accrue from the injurious selection of food, and from ignorance of the commonest laws of dietetics, there is abundant reason for urging the substitution of a wet-nurse whenever the mother is unable to undertake the suckling of her child. It must be admitted that good hand-feeding is better than bad wet-nursing, and the success of the latter hinges on the proper selection of a wet-nurse. As this falls within the duties of the practitioner, it will be well to point out the qualities which should be sought for in a wet-nurse, before proceeding to discuss the mode of rearing the child at the breast.

**Selection of a Wet-nurse.**—In selecting a wet-nurse we should endeavor to choose a strong, healthy woman, who should not be over

thirty or thirty-five years of age at the outside, since the quality of the milk deteriorates in women who are more advanced in life. For a similar reason a very young woman of sixteen or seventeen should be rejected. It is needless to say that care must be taken to ascertain the absence of all traces of constitutional disease, especially marks of scrofula, or enlarged cervical or inguinal glands, which may possibly be due to antecedent syphilitic taint. If the nurse be of good muscular development, healthy-looking, with a clear complexion, and sound teeth (indicating a generally good state of health), the color of the hair and eyes is of secondary importance. It is commonly stated that brunettes make better nurses than blondes, but this is by no means necessarily the case; and provided all the other points be favorable, fairness of skin and hair need be no bar to the selection of a nurse. The breasts should be pear-shaped, rather firm, as indicating an abundance of gland-tissue, and with the superficial veins well marked. Large, flabby breasts owe much of their size to an undue deposit of fat, and are generally unfavorable. The nipple should be prominent, not too large, and free from cracks and erosions, which, if existing, might lead to subsequent difficulties in nursing. On pressing the breast the milk should flow from it easily in a number of small jets, and some of it should be preserved for examination. It should be of a bluish-white color, and when placed under the microscope the field should be covered with an abundance of milk corpuscles, and the large granular corpuscles of the colostrum should have entirely disappeared. If the latter be observed in any quantity in a woman who has been confined five or six weeks, the inference is that the milk is inferior in quality. It is not often that the practitioner has an opportunity of inquiring into the moral qualities of the nurse, although much valuable information might be derived from a knowledge of her previous character. An irascible, excitable, or highly nervous woman will certainly make a bad nurse, and the most trivial causes might afterward interfere with the quality of her milk. Particular attention should be paid to the nurse's own child, since its condition affords the best criterion of the quality of her milk. It should be plump, well-nourished, and free from all blemishes. If it be at all thin and wizened, especially if there be any snuffling at the nose, or should any eruption exist affording the slightest suspicion of a syphilitic taint, the nurse should be unhesitatingly rejected.

**Management of Suckling.**—The management of suckling is much the same whether the child is nursed by the mother or by a wet-nurse. As soon as the supply of milk is sufficiently established, the child must be put to the breast at short intervals, at first of about two hours, and, in about a month or six weeks, of three hours. From the first few days it is a matter of the greatest importance, both to the mother and child, to acquire regular habits in this respect. If the mother gets into the way of allowing the infant to take the breast whenever it cries, as a means of keeping it quiet, her own health must soon suffer, to say nothing of the discomfort of being incessantly tied to the child's side; while the child itself has not sufficient rest to digest its food, and very shortly diarrhoea or other symptoms of



dyspepsia are pretty sure to follow. After a month or two the infant should be trained to require the breast less often at night, so as to enable the mother to have an undisturbed sleep of six or seven hours. For this purpose she should arrange the times of nursing so as to give the breast just before she goes to bed, and not again until the early morning. If the child should require food in the interval, a little milk in water, from the bottle, may be advantageously given.

**Diet of Nursing Women.**—The diet of the nursing woman should be arranged on ordinary principles of hygiene. It should be abundant, simple, and nutritious, but all rich and stimulating articles of food should be avoided. A common error in the diet of wet-nurses is over-feeding, which constantly leads to deterioration of the milk. Many of these women, before entering on their functions, have been living on the simplest and even sparest diet, and not uncommonly, in the better class of houses, they are suddenly given heavy meat meals three and even four times a day, and often three or four glasses of stout. It is hardly a matter of astonishment that, under such circumstances, their milk should be found to disagree. For a nursing woman in good health two good meat meals a day, with two glasses of beer or porter, and as much milk and bread-and-butter as she likes to take in the intervals, should be amply sufficient. Plenty of moderate exercise should be taken, and the more the nurse and child are out in the open air, provided the weather be reasonably fine, the better it is for both.

[Usually the wet-nurses employed in our cities are of foreign birth; where they are natives, their children are commonly illegitimate. An American nurse is in general preferable, and as a rule those making application have not been in the habit of using malt drinks. A healthy woman will usually nurse well on her ordinary diet, which should be largely farinaceous. Ale is often recommended to nursing mothers, and so also is tea, but both are very inferior to milk and farinaceous diets prepared with milk. Broma prepared with cream I have seen taken once a day, for a change, with advantage.—Ed.]

**Signs of Successful Lactation.**—Carried on methodically in this manner, wet-nursing should give but little trouble. In the intervals between its meals the child sleeps most of its time, and wakes with regularity to feed; but if the child be wakeful and restless, cry after feeding, have disordered bowels, and, above all, if it do not gain, week by week, in weight (a point which should be, from time to time, ascertained by the scales), we may conclude that there is either some grave defect in the management of suckling, or that the milk is not agreeing. Should this unsatisfactory progress continue, in spite of our endeavors to remedy it, there is no resource left but the alteration of the diet, either by changing the nurse or by bringing up the child by hand. The former should be preferred whenever it is practicable, and in the upper ranks of life it is by no means rare to have to change the wet-nurse two or three times before one is met with whose milk agrees perfectly. If the child have reached six or seven months of age, it may be preferable to wean it altogether, especially if the mother has nursed it, as hand-feeding is much less objectionable if the infant has had the breast for even a few months.

**Period of Weaning.**—As a rule, weaning should not be attempted until dentition is fairly established, that being the sign that Nature has prepared the child for an alteration of food; and it is better that the main portion of the diet should be breast milk until at least six or seven teeth have appeared. This is a safer guide than any arbitrary rule taken from the age of the child, since the commencement of dentition varies much in different cases. About the sixth or seventh month it is a good plan to commence the use of some suitable artificial food once a day, so as to relieve the strain on the mother or nurse, and prepare the child for weaning, which should always be a very gradual process. In this way a meal of rusks of entire wheat-flour, or of beef- or chicken-tea, with bread-crumbs in it, may be given with advantage; and as the period for weaning arrives a second meal may be added, and so eventually the child may be weaned without distress to itself or trouble to the nurse.

The disorders of lactation are numerous, and as they frequently come under the notice of the practitioner, it is necessary to allude to some of the most common and important.

**Means of Arresting the Secretion of Milk.**—The advice of the accoucheur is often required in cases in which it has been determined that the patient is not to nurse, when we desire to get rid of the milk as soon as possible, or when, at the time of weaning, the same object is sought. The extreme heat and distention of the breasts, in the former class of cases, often give rise to much distress. A smart saline aperient will aid in removing the milk, and for this purpose a double Seidlitz powder, or frequent small doses of sulphate of magnesia, act well; while, at the same time, the patient should be advised to take as small a quantity of fluid as possible. Iodide of potassium in large doses of twenty or twenty-five grains, repeated twice or thrice, has a remarkable effect in arresting the secretion of milk. This observation was first empirically made by observing that the secretion of milk was arrested when this drug was administered for some other cause; and I have frequently found it answer remarkably well. The distention of the breasts is best relieved by covering them with a layer of lint or cotton-wool, soaked in a spirit lotion or eau de Cologne and water, over which oiled silk is placed, and by directing the nurse to rub them gently with warm oil, whenever they get hard and lumpy. Breast-pumps and similar contrivances only irritate the breasts, and do more harm than good. The local application of belladonna has been strongly recommended as a means for preventing lacteal secretion. As usually applied, in the form of belladonna plaster, it is likely to prove hurtful, since the breast often enlarges after the plasters are applied, and the pressure of the unyielding leather on which they are spread produces intense suffering. A better way of using it is by rubbing down a drachm of the extract of belladonna with an ounce of glycerin, and applying this on lint. In some cases it answers extremely well; but it is very uncertain in its action, and frequently is quite useless.

**Defective Secretion of Milk.**—A deficiency of milk in nursing-mothers is a very common source of difficulty. In a wet-nurse this drawback is, of course, an indication for changing the nurse: but to



the mother the importance of nursing is so great that an endeavor must be made either to increase the flow of milk or to supplement it by other food. Unfortunately, little reliance can be placed on any of the so-called galactagogues. The only one which in recent times has attracted attention is the leaves of the castor-oil plant, which, made into poultices and applied to the breast, are said to have a beneficial effect in increasing the flow of milk. More reliance may be placed in a sufficiency of nutritious food, especially such as contains phosphatic elements; stewed eels, oysters, and other kinds of shell-fish, and the *Revalenta Arabica*, are recommended by Dr. Routh, who has paid some attention to this point,<sup>1</sup> as peculiarly appropriate. If the amount of milk be decidedly deficient, the child should be less often applied to the breast, so as to allow milk to collect, and properly prepared cow's milk from a bottle should be given alternately with the breast. This mixed diet generally answers well, and is far preferable to pure hand-feeding.

[There is no diet equivalent to milk for a nursing-mother, where it agrees with her. This I have tested repeatedly in women who had failed entirely in former attempts to nurse their infants. One lady who had lost her milk three times at the end of a month, and had nursed two babies into starvation, was enabled to nurse her fourth while on a milk diet for eighteen months, and gained while doing so nineteen pounds. Another gained sixty-five pounds while nursing, and her son was very large for his age. A third lost a child by hand-feeding, and nursed the next infant on a milk diet, at the same time becoming fatter than she had ever been. A decided advantage in the use of milk is, that it prevents the exhausted feeling so common with delicate nursing mothers. I have had a patient of eighty-six pounds weight use two quarts of milk a day, and at the same time eat her usual measure of food, which had always been of small amount.—Ed.]

**Depressed Nipples.**—A not uncommon source of difficulty is a depressed condition of the nipples, which is generally produced by the constant pressure of the stays. The result is that the child, unable to grasp the nipple, and wearied with ineffectual efforts, may at last refuse the breast altogether. An endeavor should be made to elongate the nipple before putting it into the child's mouth, either by the fingers or by some form of breast-pump, which here finds a useful application. In the worst class of cases, when the nipple is permanently depressed, it may be necessary to let the child suck through a glass nipple-shield, to which is attached an India-rubber tube similar to that of a sucking-bottle; this it is generally well able to do.

**Fissures and Excoriations of the Nipples.**—Fissures and excoriations of the nipples are common causes of suffering, in some cases leading to mammary abscess. Whenever the practitioner has the opportunity, he should advise his patient to prepare the nipple for nursing in the latter months of pregnancy; and this may best be done by daily bathing it with a spirituous or astringent lotion, such as *cau de Cologne* and water or a weak solution of tannin. After nursing

<sup>1</sup> Routh on Infant-feeding.

has begun great care should be taken to wash and dry the nipple after the child has been applied to it, and, as long as the mother is in the recumbent position, she may, if the nipples be at all tender, use zinc nipple-shields with advantage when she is not nursing. In this way these troublesome complications may generally be prevented. The most common forms are either an abrasion on the surface of the nipple, which, if neglected, may form a small ulcer, or a crack at some part of the nipple, most generally at its base. In either case, the suffering when the child is put to the breast is intense, sometimes indeed amounting to intolerable anguish, causing the mother to look forward with dread to the application of the child. Whenever such pain is complained of, the nipple should be carefully examined, since the fissure or sore is often so minute as to escape superficial examination. The remedies recommended are very numerous and not always successful. Amongst those most commonly used are astringent applications, such as tannin or weak solutions of nitrate of silver, or cauterizing the edges of the fissure with solid nitrate of silver, or applying the flexible collodion of the *Pharmacopœia*. Dr. Wilson, of Glasgow, speaks highly of a lotion composed of ten grains of nitrate of lead in an ounce of glycerin, which is to be applied after suckling, the nipple being carefully washed before the child is again put to the breast. I have myself found nothing answer so well as a lotion composed of half an ounce of sulphurous acid, half an ounce of the glycerin of tannin, and an ounce of water, the beneficial effects of which are sometimes quite remarkable. Relief may occasionally be obtained by inducing the child to suck through a nipple-shield, especially when there is only an excoriation; but this will not always answer, on account of the extreme pain which it produces.

**Excessive Flow of Milk.**—An excessive flow of milk, known as *galactorrhœa*, often interferes with successful lactation. It is by no means rare in the first weeks after delivery for women of delicate constitutions who are really unfit to nurse, to be flooded with a superabundance of watery and innutritious milk, which soon produces disordered digestion in the child. Under such circumstances the only thing to be done is to give up an attempt which is injurious both to the mother and child. At a later stage the milk, secreted in large quantities, is sufficiently nourishing to the child, but the drain on the mother's constitution soon begins to tell on her. Palpitation, giddiness, emaciation, headache, loss of sleep, spots before the eyes, indicate the serious effects which are being produced, and the absolute necessity of at once stopping lactation. Whenever, therefore, a nursing-woman suffers from such symptoms, it is far better at once to remove the cause, otherwise a very serious and permanent deterioration of health might result. When, under such circumstances, nursing is unwisely persevered in, most serious results may follow. Should any diathetic tendency exist, especially when there is a predisposition to phthisis, nothing is so likely to develop it as the debility produced by excessive lactation. Certain diseases of the eye are then specially apt to occur, such as severe inflammation of the cornea, leading to opacity and even



sloughing, and certain forms of choroiditis; also impairment of accommodation due to defective power of the ciliary muscle.<sup>1</sup>

**Mammary Abscess.**—There is no more troublesome complication of lactation than the formation of abscess in the breast; an occurrence by no means rare, and which, if improperly treated, may, by long-continued suppuration and the formation of numerous sinuses in and about the breast, produce very serious effects on the general health. The causes of breast abscesses are numerous, and very trivial circumstances may occasionally set up inflammation ending in suppuration. Thus it may follow exposure to cold, a blow or other injury to the breast, some temporary engorgement of the lacteal tubes, or even sudden or depressing mental emotions. The most frequent cause is irritation from fissures or erosions of the nipple, which must therefore always be regarded with suspicion and cured as soon as possible.

It has of late years been held that mammary abscess generally arises from septic infection through such fissures, an idea first suggested by Kaltenbach. Since that date pyogenic microbes have generally been detected in puerperal mammary abscesses. It is considered possible that infective microbes may find an entrance through the openings of the lactiferous ducts, when no fissures exist.<sup>2</sup> These considerations obviously point to the necessity of extreme care and cleanliness in all nursing-women.

The abscess may form in any part of the breast, or in the areolar tissue below it; in the latter case, the inflammation very generally extends to the gland structure. Abscess is usually ushered in by constitutional symptoms, varying in severity with the amount of the inflammation. Pyrexia is always present; elevated temperature, rapid pulse, and much malaise and sense of feverishness, followed, in many cases, by distinct rigor, when deep-seated suppuration is taking place. On examining the breast it will be found to be generally enlarged and very tender, while at the site of the abscess an indurated and painful swelling may be felt. If the inflammation be chiefly limited to the sub-glandular areolar tissue, there may be no localized swelling felt, but the whole breast will be acutely sensitive and the slightest movement will cause much pain. As the case progresses, the abscess becomes more and more superficial, the skin covering it is red and glazed, and if left to itself it bursts. In the more serious cases it is by no means rare for multiple abscesses to form. These, opening one after the other, lead to the formation of numerous fistulous tracts, by which the breast may become completely riddled. Sloughing of portions of the gland tissue may take place, and even considerable hemorrhage from the destruction of bloodvessels. The general health soon suffers to a marked degree, and, as the sinuses continue to suppurate for many successive months, it is by no means uncommon for the patient to be reduced to a state of profound and even dangerous debility.

<sup>1</sup> See Foerster, of Breslau, in Graefe and Saemisch's *Handbuch des Gesammten Augenheilkunde*, and Power on "The Diseases of the Eye in Connection with Pregnancy," *Lancet*, 1886, vol. i. p. 709 et seq.

<sup>2</sup> See Dr. J. Watt Black's Inaugural Address, *Obstet. Trans.*, vol. xxxii. p. 97.

**Treatment.**—Much may be done by proper care to prevent the formation of abscess, especially by removing engorgement of the lacteal ducts, when threatened, by gentle hand-friction in the manner already indicated. When the general symptoms and the local tenderness indicate that inflammation has commenced, we should at once endeavor to moderate it, in the hope that resolution may occur without the formation of pus. Here general principles must be attended to, especially giving the affected part as much rest as possible. Feverishness may be combated by gentle salines, minute doses of aconite, and large doses of quinine; while pain should be relieved by opiates. The patient should be strictly confined in bed, and the affected breast supported by a suspensory bandage. Warmth and moisture are the best means of relieving the local pain, either in the form of hot fomentations or of light poultices of linseed-meal or bread and milk, and the breast may be smeared with extract of belladonna rubbed down with glycerin, or the belladonna liniment sprinkled over the surface of the poultices. The local application of ice in India-rubber bags has been highly extolled as a means of relieving the pain and tension, and it is said to be much more effectual than heat and moisture.<sup>1</sup> Generally the pain and irritation produced by putting the child to the breast are so great as to contra-indicate nursing from the affected side altogether, and we must trust to relieving the tension by poultices; suckling being, in the meantime, carried on at the other breast alone. In favorable cases this is quite possible for a time, and it may be that, if the inflammation do not end in suppuration, or if the abscess be small and localized, the affected breast is again able to resume its functions. Often this is not possible, and it may be advisable, in severe cases, to give up nursing altogether.

The subsequent management of the case consists in the opening of the abscess as soon as the existence of pus is ascertained, either by fluctuation, or, if the site of the abscess be deep-seated, by the exploring-needle. It may be laid down as a principle, that the sooner the pus is evacuated the better, and nothing is to be gained by waiting until it is superficial. On the contrary, such delay only leads to more extensive disorganization of tissue, and the further spread of inflammation.

The method of opening the abscess is of primary importance. Care should be taken to make the incision in a line radiating from the nipple, so as to avoid cutting across the ducts. It has formerly been customary simply to open the abscess at its most dependent part, without using any precaution against the admission of air, and afterward to treat secondary abscesses in the same way. The results are well known to all practical accoucheurs, and the records of surgery fully show how many weeks or months generally elapse in bad cases before recovery is complete. The antiseptic treatment of mammary abscess, in the way first pointed out by Lister, affords results which are of the most remarkable and satisfactory kind. Instead of being weeks and months in healing, I believe that the practitioner who fairly

<sup>1</sup> Corson: *Amer. Journ. of Obstet.*, 1881, vol. xiv. p. 48.



and minutely carries out Sir Joseph Lister's directions may confidently look for complete closure of the abscess in a few days; and I know nothing in the whole range of my professional experience that has given me more satisfaction than the application of this method to abscesses of the breast. The plan I first used is that recommended by Lister in the *Lancet* for 1867, but which is now superseded by his improved methods, which, of course, will be used in preference by all who have made themselves familiar with the details of antiseptic surgery. The former, however, is easily within the reach of everyone, and is so simple that no special skill or practice is required in its application; whereas the more perfected antiseptic appliances will probably not be so readily obtained, and are much more difficult to use. I therefore insert Sir Joseph Lister's original directions, which he assures me are perfectly antiseptic, for the guidance of those who may not be able to obtain the more elaborate dressings: "A solution of one part of crystallized carbolic acid in four parts of boiled linseed oil having been prepared, a piece of rag from four to six inches square is dipped into the oily mixture and laid upon the skin where the incision is to be made. The lower edge of the rag being then raised, while the upper edge is kept from slipping by an assistant, a common scalpel or bistoury dipped in the oil is plunged into the cavity of the abscess, and an opening about three-quarters of an inch in length is made, and the instant the knife is withdrawn the rag is dropped upon the skin as an antiseptic curtain, beneath which the pus flows out into a vessel placed to receive it. The cavity of the abscess is firmly pressed, so as to force out all existing pus as nearly as may be (the old fear of doing mischief by rough treatment of the pyogenic membrane being quite ill-founded); and if there be much oozing of blood, or if there be considerable thickness of parts between the abscess and the surface, a piece of lint dipped in the antiseptic oil is introduced into the incision to check bleeding and prevent primary adhesion, which is otherwise very apt to occur. The introduction of the lint is effected as rapidly as may be, and under the protection of the antiseptic rag. Thus the evacuation of the original contents is accomplished with perfect security against the introduction of living germs. This, however, would be of no avail unless an antiseptic dressing could be applied that would effectually prevent the decomposition of the stream of pus constantly flowing out beneath it. After numerous disappointments, I have succeeded with the following, which may be relied upon as absolutely trustworthy: About six teaspoonfuls of the above-mentioned solution of carbolic acid in linseed oil are mixed up with common whiting (carbonate of lime) to the consistence of a firm paste, which is, in fact, glazier's putty with the addition of a little carbolic acid. This is spread upon a piece of common tinfoil about six inches square, so as to form a layer about a quarter of an inch thick. The tinfoil, thus spread with putty, is placed upon the skin, so that the middle of it corresponds to the position of the incision, the antiseptic rag used in opening the abscess being removed the instant before. The tin is then fixed securely by adhesive plaster, the lowest edge being left free for the escape of the discharge into a folded towel placed over it and

secured by a bandage. The dressing is changed, as a general rule, once in twenty-four hours, but, if the abscess be a very large one, it is prudent to see the patient twelve hours after it has been opened, when, if the towel should be much stained with discharge, the dressing should be changed, to avoid subjecting its antiseptic virtues to too severe a test. But after the first twenty-four hours a single daily dressing is sufficient. The changing of the dressing must be methodically done as follows: A second similar piece of tinfoil having been spread with the putty, a piece of rag is dipped in the oily solution and placed on the incision the moment the first tin is removed. This guards against the possibility of mischief occurring during the cleansing of the skin with a dry cloth, and pressing out any discharge which may exist in the cavity. If a plug of lint was introduced when the abscess was opened, it is removed under cover of the antiseptic rag, which is taken off at the moment when the new tin is to be applied. The same process is continued daily until the sinus closes."

**Treatment of Long-continued Suppuration.**—If the case come under our care when the abscess has been long discharging, or when sinuses have formed, the treatment is directed mainly to procuring a cessation of suppuration and closure of the sinuses. For this purpose methodical strapping of the breast with adhesive plaster, so as to afford steady support and compress the opposing pyogenic surfaces, will give the best results. It may be necessary to lay open some of the sinuses, or to inject tinct. iodi or other stimulating lotions, so as to moderate the discharge, the subsequent surgical treatment varying according to the requirements of each case. In such neglected cases Billroth recommends that, after the patient has been anaesthetized, the openings should be dilated so as to admit the finger, by which the septa between the various sinuses should be broken down and a large single abscess-cavity made. This should then be thoroughly irrigated with a 3 per cent. solution of carbolic acid, a drainage-tube introduced, and the ordinary antiseptic dressings applied. As the drain on the system is great, and the constitutional debility generally pronounced, much attention must be paid to general treatment; and abundance of nourishing food, appropriate stimulants, and such medicines as iron and quinine, will be indicated.

**Hand-feeding.**—In a considerable number of cases the inability of the mother to nurse her child, her invincible repugnance to a wet-nurse, or inability to bear the expense, renders hand-feeding essential. It is, therefore, of importance that the accoucheur should be thoroughly familiar with the best method of bringing up the child by hand, so as to be able to direct the process in the way that is most likely to be successful.

Much of the mortality following hand-feeding may be traced to unsuitable food. Among the poorer classes especially there is a prevalent notion that milk alone is insufficient; and hence the almost universal custom of administering various farinaceous foods, such as corn-flour or arrowroot, even from the earliest period. Many of these consist of starch alone, and are therefore absolutely unsuited for forming the staple of diet, on account of the total absence of nitro-



genized elements. Independently of this, it has been shown that the saliva of infants has not the same digestive property on starch that it subsequently acquires, and this affords a further explanation of its so constantly producing intestinal derangement. Reason as well as experience abundantly proves that the object to be aimed at in hand-feeding is to imitate as nearly as possible the food which Nature supplies for the newborn child, and, therefore, the obvious course is to use milk from some animal, so treated as to make it resemble human milk as nearly as may be.

Of the various milks used, that of the ass, on the whole, most closely resembles human milk, containing less casein and butter, and more saline ingredients. It is not always easy to obtain, and in towns it is excessively expensive. Moreover, it does not always agree with the child, being apt to produce diarrhoea. We can, however, be more certain of its being unadulterated, which in large cities is in itself no small advantage, and it may be given without the addition of water or sugar.

Goat's milk in England is still more difficult to obtain, but it often succeeds admirably. In many places the infant sucks the teat directly, and certainly thrives well on this plan.

**Cow's Milk and its Preparation.**—In a large majority of cases we have to rely on cow's milk alone. It differs from human milk in containing less water, a larger amount of casein and solid matters, and less sugar. Therefore, before being given it requires to be diluted and sweetened. A common mistake is over-dilution, and it is far from rare for nurses to administer one-third cow's milk to two-thirds water. The result of this excessive dilution is, that the child becomes pale and puny, and has none of the firm and plump appearance of a well-fed infant. The practitioner should, therefore, ascertain that this mistake is not being made; and the necessary dilution will be best obtained by adding to pure fresh cow's milk one-third hot water, so as to warm the mixture to about 96°, the whole being slightly sweetened with sugar of milk or ordinary crystallized sugar. After the first two or three months the amount of water may be lessened, and pure milk, warmed and sweetened, given instead. Whenever it is possible, the milk should be obtained from the same cow, and in towns some care is requisite to see that the animal is properly fed and stabled. Of late years it has been customary to obviate the difficulties of obtaining good fresh milk by using some of the canned milks now so easily to be had. These are already sweetened, and sometimes answer well if not given in too weak a dilution. One great drawback in bottle-feeding is the tendency of the milk to become acid, and hence to produce diarrhoea. This may be obviated to a great extent by adding a tablespoonful of lime-water to each bottle, instead of an equal quantity of water.

**Artificial Human Milk.**—An admirable plan of treating cow's milk, so as to reduce it to almost absolute chemical identity with human milk, has been devised by Professor Frankland, to whom I am indebted for permission to insert the recipe. I have followed this method in many cases, and find it far superior to the usual one, as it produces an exact and uniform compound. With a little practice

nurses can make it with no more trouble than the ordinary mixing of cow's milk with water and sugar. The following extract from Dr. Frankland's work<sup>1</sup> will explain the principles on which the preparation of the artificial human milk is founded: "The rearing of infants who cannot be supplied with their natural food is notoriously difficult and uncertain, owing chiefly to the great difference in the chemical composition of human milk and cow's milk. The latter is much richer in casein and poorer in milk-sugar than the former, whilst ass's milk, which is sometimes used for feeding infants, is too poor in casein and butter, although the proportion of sugar is nearly the same as in human milk. The relations of the three kinds of milk to each other are clearly seen from the following analytical numbers, which express the percentage amounts of the different constituents:

	Woman.	Ass.	Cow.
Casein . . . . .	2.7	1.7	4.2
Butter . . . . .	3.5	1.3	3.8
Milk-sugar . . . . .	5.0	4.5	3.8
Salts . . . . .	0.2	0.5	0.7

These numbers show that by the removal of one-third of the casein from cow's milk and the addition of about one-third more milk-sugar, a liquid is obtained which closely approaches human milk in composition, the percentage amounts of the four chief constituents being as follows:

Casein . . . . .	2.8
Butter . . . . .	3.8
Milk-sugar . . . . .	5.9
Salts . . . . .	0.7

The following is the mode of preparing the milk: Allow one-third of a pint of new milk to stand for about twelve hours, remove the cream, and to the latter add two-thirds of a pint of new milk, as fresh from the cow as possible. Into the one-third of a pint of blue milk left after the abstraction of the cream put a piece of rennet about one inch square. Set the vessel in warm water until the milk is fully curdled, an operation requiring from five to fifteen minutes according to the activity of the rennet, which should be removed as soon as the curdling commences and put into an egg-cup for use on subsequent occasions, as it may be employed daily for a month or two. Break up the curd repeatedly, and carefully separate the whole of the whey, which should then be rapidly heated to boiling in a small tin pan placed over a spirit or gas lamp. During the heating a further quantity of casein, technically called 'flectings,' separates, and must be removed by straining through muslin. Now dissolve 110 grains of powdered sugar of milk in the hot whey, and mix it with the two-thirds of a pint of new milk to which the cream from the other third of a pint was added as already described. The artificial milk should be used within twelve hours of its preparation, and it is almost needless to add that all the vessels employed in its manufacture and administration should be kept scrupulously clean."<sup>2</sup>

<sup>1</sup> Frankland's Experimental Researches in Chemistry, p. 843.

<sup>2</sup> The following recipe yields the same results, but the method is easier, and I find that nurses prepare the milk with less difficulty when it is followed: "Heat half a pint of skimmed milk to about 96°, that is, just warm, and well stir into the warmed milk a measure full of Walden's



**Method of Hand-feeding.**—Much of the success of bottle-feeding must depend on minute care and scrupulous cleanliness, points which cannot be too strongly insisted on. Particular attention should be paid to preparing the food fresh for every meal, and to keeping the feeding bottle and tubes constantly in water when not in use, so that minute particles of milk may not remain about them and become sour. A neglect of this is one of the most fertile sources of the thrush from which bottle-fed infants often suffer. The particular form of bottle used is not of much consequence. Those now commonly employed, with a long India-rubber tube attached, are preferable to the older forms of flat bottle, as they necessitate strong suction on the part of the infant, thus forcing it to swallow the food more slowly. Care must be taken to give the meals at stated periods, as in breast-feeding, and these should be at first about two hours apart, the intervals being gradually extended. The nurse should be strictly cautioned against the common practice of placing the bottle beside the infant in its cradle and allowing it to suck to repletion—a practice which leads to over-distention of the stomach and consequent dyspepsia. The child should be raised in the arms at the proper time, have its food administered, and then replaced in the cradle to sleep. In the first few weeks of bottle-feeding constipation is very common, and may be effectually remedied by placing as much phosphate of soda as will lie on a threepenny-piece in the bottle, two or three times in the twenty-four hours.

**Other Kinds of Food.**—If this system succeed, no other food should be given until the child is six or seven months old, and then some of the various infants' foods may be cautiously commenced. Of these there are an immense number in common use, some of which are good articles of diet, others are unfitted for infants. In selecting them we have to see that they contain the essential elements of nutrition in proper combination. All those, therefore, that are purely starchy in character, such as arrowroot, corn-flour, and the like, should be avoided; while those that contain nitrogenous as well as starch elements may be safely given. Of the latter the entire wheat-flour, which contains the husks ground down with the wheat, generally answers admirably; and of the same character are rusks, tops and bottoms, Nestlé's or Liebig's infants' food, and many others. If the child be pale and flabby, some more purely animal food may often be given twice a day, and great benefit may be derived from a single meal of beef, chicken, or veal tea, with a little bread-crumbs in it, especially after the sixth or seventh month. Milk, however, should still form the main article of diet, and should continue to do so for many months.

**Management when Milk Disagrees.**—If the child be pale, flabby, and do not gain flesh, more especially if diarrhoea or other intestinal disturbance be present, we may be certain that hand-feeding is not

extract of rennet. When it is set, break up the curd quite small, and let it stand for ten or fifteen minutes, when the curd will sink; then place the whey in a saucepan and boil quickly. In a third of a pint of this whey dissolve a heaped-up teaspoonful of sugar of milk. When quite cold, add two-thirds of a pint of new milk and two teaspoonfuls of cream, well stirring the whole together. If during the first month the milk is too rich, use rather more than a third of a pint of whey.

answering satisfactorily, and that some change is required. If the child be not too old, and will still take the breast, that is certainly the best remedy, but if that be not possible, it is necessary to alter the diet. When milk disagrees, cream, in the proportion of one table-spoonful to three of water, sometimes answers as well. Occasionally also Liebig's or Mellin's infants' food, when carefully prepared, renders good service. Too often, however, when once diarrhoea or other intestinal disturbance has set in, all our efforts may prove unavailing, and the health, if not the life, of the infant becomes seriously imperilled. It is not, however, within the scope of this work to treat of the disorders of infants at the breast, the proper consideration of which requires a large amount of space, and I therefore refrain from making any further remarks on the subject.

### CHAPTER III.

#### PUERPERAL ECLAMPSIA.

**Puerperal Eclampsia.**—By the term puerperal eclampsia is meant a peculiar kind of epileptiform convulsions, which may occur in the latter months of pregnancy, or during or after parturition, and it constitutes one of the most formidable diseases with which the obstetrician has to cope. The attack is often so sudden and unexpected, so terrible in its nature, and attended with such serious danger both to the mother and child, that the disease has attracted much attention.

**Its Doubtful Etiology.**—The researches of Lever, Braun, Frerichs, and many other writers who have shown the frequent association of eclampsia with albuminuria, have of late years been supposed to clear up to a great extent the etiology of the disease and to prove its dependence on the retention of urinary elements in the blood. While the urinary origin of eclampsia has been pretty generally accepted, more recent observations have tended to throw doubt on its essential dependence on this cause; so that it can hardly be said that we are yet in a position to explain its true pathology with certainty. These points will require separate discussion, but it is first necessary to describe the character and history of the attack.

Considerable confusion exists in the description of puerperal convulsions from the confounding of several essentially distinct diseases under the same name. Thus in most obstetric works it has been customary to describe three distinct classes of convulsion, the *epileptic*, the *hysterical*, and the *apoplectic*. The two latter, however, come under a totally different category. A pregnant woman may suffer from hysterical paroxysms, or she may be attacked with apoplexy