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Obstetrics: The Science and the Art - Part IV. The History and Diseases of the Young Child; Chapter XXIII. Viability

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PART IV.

THE HISTORY AND DISEASES OF THE YOUNG CHILD.

CHAPTER XXIII.

The child in utero, as has already been stated, requires for its complete development a lapse of nine months, or two hundred and eighty days less or more. It becomes viable at seven months, though some children have lived that have been born much earlier than this; yet it is proper to say that viability is attained at the seventh month.

The viability of the foetus depends upon the evolution and perfecting of its organs to such a degree as to enable it to live a respiratory life. This it could not do until its lungs should be sufficiently evolved to enable the air-cells to receive the atmospheric air, and fitted also to make the transfer of oxygen to the blood and of carbon to the expired air. If a child should be expelled while its air-cells were still undeveloped, it would necessarily perish immediately from the atelectasis; new-born children expelled shortly before their time die, not because they have a complete but because they have a partial atelectasis pulmonum. The heart of a child, in the earlier of its embryonal periods, is a straight tube; it soon becomes tortuous, and afterwards makes two cavities, which are its auricle and ventricle. The progress of the uterine life brings the foetal-organs daily nearer and nearer to the condition of those of the breathing mammal; but it does not attain this condition, until the seventh month of gestation. If driven into the world before the completion of the organization of its heart, it could not be deemed viable or liveable, because it could not successfully carry on the work of oxygenating its brain and nervous mass.

The septum ventriculorum of the foetus in utero is early completed; if the septum auricularum should be also completed before the period of its birth, the child would necessarily be born dead, because there is
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No route by which the oxygenated blood of its placenta could be submitted to the action of the systemic ventricle, save that by which it traverses the right auricle and the foramen ovale, passing into the systemic ventricle, and that which it performs when driven by the right ventricle into the aorta through the ductus arteriosus. The black blood of its ductus arteriosus enters the aorta below the giving off of the carotids and subclavians: that blood can by no means reach the brain, but goes into the tissues below, where it gives up its oxygen or returns to the placenta to take an additional charge: therefore, none of the oxygeniferous blood of the child can reach the brain, save that which comes into its systemic ventricle through the foramen ovale and the left auricle. A child, therefore, whose foramen ovale should be completely closed in utero—to suppose the case—would necessarily perish with asphyxia, for asphyxia is black blood in the brain; nothing else is asphyxia.

Therefore, the neonatus is necessarily born with an open foramen ovale; but the foramen ovale is covered by a valve that lies on the left surface of the septum, and serves after birth as an operculum or lid to shut the passage. It is probable that the first inspiration of atmospheric air, coinciding with the descent of the diaphragm and the expansion of the thorax in every direction, serves to carry off to the lungs, through the pulmonary artery, a great efflux of blood, which, antecedent to that first act of respiration, chiefly flowed off through the ductus arteriosus. The constantly augmenting facilities of this new pulmonary circulation soon set aside any further necessity for the ductus arteriosus—whose deserted channel becomes a ligamentous band.

The increased amount of blood thus determined to the lungs must have the effect of throwing a greatly augmented quantity of fluid upon the right ventricle; not to say that the right side of the heart carries on a greater circulation after birth than before birth; but the right ventricle cannot but carry on a much greater amount now, because it carries on the whole, whereas, before birth it carried on only a moiety of it, the other half having passed through the foramen ovale.

The passage of the blood from the right ventricle into the pulmonary artery is probably effected with a facility greater than was that of its propulsion into the aorta through the ductus arteriosus; and I can imagine that now, the pressure of the two symmetrical halves of the heart being equalized, the valve of Botalli, instead of floating upwards into the left auricle, by this equalization of the pressure is shut down as the operculum of the foramen ovale; so that, although the child is necessarily born with an open foramen ovale, the equaliza-
tion of force in the two halves serves to close it immediately after
the first act of aspiration. One need, therefore, suffer no disquieting
doubts or uncertainty in regard to the openness of the foramen ovale
in the healthy neonatus at term.

In the non-viable child, previous to the seventh month, the valve
of Botalli is incomplete and is not a perfect operculum; it cannot
thoroughly cover the orifice of the foramen ovale. If the child, there-
fore, be born without a complete valve, it will probably die from as-
phyxia, from the mixture of its black and red currents in the systemic
ventricle; a child, therefore, whose heart is incomplete is non-viable.
Some children born at term appear not to have conformably developed
this valve.

A child is rendered non-viable, in consequence of many other faults
of development. The astomatous child is non-viable, as is that in
which the oesophagus has failed, in part, of its development, rendering
the cavity of the stomach inaccessible to aliment. The anencephalous
child is non-viable, since important parts of its organization are wholly
wanting; the aceanphalous fetus dies of course. The child is non-viable
in which ectopy of important organs, as for example ectopy of the
liver and the whole alimentary canal into the root of the umbilical
cord, exists; for the cord, being deciduous, must fall off in the course
of a few days, leaving the vital organs exposed to inevitable ruin.
The child is non-viable in whom large portions of the rectum fail to
be developed, although a few examples are met with in which the sur-
geon, by a dextrous operation, has saved the life of the child laboring
under imperforate rectum; probably those that have been thus saved
have failed to produce merely a short tractus of that intestine.

Many children perish in the womb from disorders affecting impor-
tant parts. Doubtless in the early stages of embryonal life, very
slight derangements in the structure of the omphalo-mesenteric vessels,
or of the duct of the umbilical vesicle, might and do determine the
death of the new being. Children also perish in the womb from dis-
eases affecting parts within the cranium, for the child lives by its
nervous mass as truly as the breathing animal does. Diseases of the
kidney, and liver, and alimentary apparatus, prove the not unfrequent
causes of the death of the child in the womb.

Various affections of the mother produce the death of the child;
passions of the mind and physical distempers, to which she is subject,
bring it into danger, or destroy its tender existence. Various diseases
affecting its umbilical cord; modifications of its placenta, whether as
to insufficient magnitude of that organ, or modifications induced by
the deposit of calcareous carbonates upon the uterine surface of the
placenta; or the establishment within it of the disease called hydatid
degeneration of the organ; or partial detachment of the placenta, serve
to destroy the young child before it is born.

The child, when it is driven into the world, is sometimes found
unable at once to establish its respiratory life; it lies still and pale,
being perfectly motionless; there is little tension of its muscles; if
handled, it appears to be flaccid, or, to use a common phrase, limber,
like a person who has fainted. If the cord be taken between the finger
and thumb, nigh to the navel, the Student will be able to judge
whether or not the heart is beating. If the heart is beating, the pul-
sations will be felt by the finger and thumb by compressing the cord,
in which are the two umbilical arteries. If the pulsations are vigor-
ous, and repeated at the rate of about one hundred and forty pulses
per minute, no alarm need be felt as to the security of the infant. In
a few moments, the diaphragm will receive its nerve-stream; it will
descend, compelling the air to enter the lungs, whose embryonal ase-
tectasis is instantly removed by the expansion of the air-cells; the
oxygen of the atmospheric air, combining with the blood of the pul-
monary circulation, will hasten to the systemic ventricle, which, inject-
ing it into the brain, extricates there a flash of vital force, that irra-
diates with instant life every nerve fibril in the constitution. This
new and powerful infusion of vital force is made manifest by struggles,
by cries, by rapid coloration of the surface, and by all the signs that
indicate an established respiratory existence. Sometimes the child
scarcely cries, or utters a low whining sound. If carefully observed,
it will be found to take very short and feeble inspirations. It has not
yet had strength of diaphragm to open in full all its air-cells. If the
Student should in such a case cause it to cry aloud, by dashing cold
water on its breast and face, he might expect a full and powerful act
of the diaphragm to open every air-tube and cell of the now perfected
lung.

As soon as the child is found fully to have established its respiration,
steps should be taken to sever it and remove it from the mother's
couch. As before directed, a ligature should be put upon the umbili-
cal cord, at the distance of an inch and a half or two inches from the
navel. Tying of the cord is not an indifferent matter, and it is neces-
sary to examine the ligature that may be presented for the purpose
before employing it, and it should be strongly jerked between the two
hands, in order to test its strength. It ought not to be less than ten
or twelve inches in length; a portion of ligature four or five inches
long cannot be firmly held, for it becomes slippery in the moistened
hands. If it be not of sufficient strength, it may, in tying the first or
second knot, give way, and allow the two hands to separate with vio-
lence, which exposes the accoucheur to the risk of tearing the cord 
at its root. When the cord is passed around the umbilicus, it 
should not be tied without taking the greatest care to avoid this sud-
den separation of the hands that are employed to tie it, upon the pos-
sible breaking of the ligature. The cord should be ten or twelve 
inches long, as I have said, so that, being held in the hands and the 
knot arranged, it can be fastened by separating the radial edges of the 
hands, rolling them both outwards in supination, without a direct 
steady pull. I never think to tie an umbilical cord in any other man-
ner than this, and more particularly as my early experience placed me 
repeatedly in danger of destroying the child, by suddenly jerking its 
navel-string, from the breaking of improper ligatures placed in my 
hands.

In applying the ligature to the umbilical cord, either one or two may 
be employed. If it should be a twin pregnancy, there surely ought to 
be two ligatures, lest, if there be a common placenta, the second child 
should suffer a dangerous loss of blood, from the untied end of the 
cord. In those cases in which the placenta is known to be detached, 
and pushed into the os uteri, it is better to have only one ligature, for, 
in that case, the blood of the placenta is discharged in considerable 
quantities from the cut extremity of the cord, thus serving to diminish 
the magnitude of the placental mass very considerably, and enabling 
the woman to thrust it forth with less effort and less pain than would 
be otherwise required.

On the other hand, if, before proceeding to the severance of the 
child, the uterus is found to be still very large, in consequence of con-
taining the placenta in its cavity, it is better to apply a second liga-
ture; by doing this, the Student would restrain the evacuation of the 
placental blood, and thereby keep the organ fuller, more plump and 
solid, which would enable the uterus more readily to slip it off from 
the utero-placental superficies than it could do if the placenta, by the 
evacuation of all its blood, should become flaccid, like a wet soft 
sponge.

The child, being removed, should be washed and afterwards dressed. 
It should be washed in tepid water at all seasons of the year. The 
body of the new-born child is usually covered with a flaky, unctuous 
matter or induitus that is insoluble in water, and is not removable by 
means of soap; it readily incorporates, however, with oil or lard, or 
the yolks of eggs. One or two yolks of eggs, beaten up and rubbed 
over the whole surface of the child, suffice to make an emulsion with 
the white induitus of the child, which is afterwards readily washed
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away by means of soap and water; or the whole child should be carefully and thoroughly anointed with a handful of lard, which also incorporates readily with the viscous matter in question, and which is readily washed off afterwards. If the attending nurse is inexperienced, the Student should direct her to use, not a piece of linen or muslin, but a portion of soft flannel, as the wash-rag for the purpose of cleansing the child's body: either linen or muslin slides over the surface and fails to pick up every portion of the induitus, whereas every particle of it is taken up by means of a wash-rag made of the bit of flannel.

In cold weather, the child should be washed in a warm room, and sufficiently near to the fire; but its surface burns readily; let the Student take heed, therefore, that its body is not exposed to be blistered, as I have seen it blistered, by being held too near an open fire or grate.

As soon as the child is thoroughly washed, a piece of linen, four inches wide and eight inches long, should be doubled to make a square disk; in the centre of this disk, a slit should be made with a pair of scissors—it is best not to cut a round hole in it. Through this slit let the remnant of the navel-string be passed, so as to let the double disk of linen lie upon the belly of the infant; the cord should be laid down flat upon this disk, pointing upwards towards the scrobicle: the linen should next be turned up so as to cover it, the right side of the piece should be turned over the cord towards the left, and the left side of the piece should be turned over covering the right, which will effectually envelop the navel-string, which is all the dressing it can require. The object of this dressing is to receive the discharges which exude from the navel-string, and prevent the cord from adhering to the child's dress, to which, without some such precaution, it would soon become glued, and thus be liable to be torn off earlier than the period at which the natural process would otherwise detach it; there is no other use in dressing the navel-string of which I am aware.

As soon as the cord is thus dressed, the belly-band, which is usually made of a strip of flannel four or five inches in width, should be put over it, and the end, carried around the body, may be pinned either at the back of the child or at the side. After this, the child should have a shirt large enough to come down nearly to the hips. If it is too long, it will be constantly wetted with the urinary discharges. Next comes the petticoat, which is usually, in this country, made of flannel, and which has or has not, according to the taste of the mother, a shoulder strap, but which always has a proper waistband. Some persons do not employ the petticoat, but a good many women still use here the barra-
coat from the Portuguese, *barra*, an ell of cloth. It is a yard of flannel, more or less, of which one end is fastened around the waist, and the other brought up and pinned in front, so as effectually to cover up the lower extremities of the child—a convenient and facile mode of dressing it in cold weather.

The last covering is the frock. I should hardly deem it necessary to mention it here, were it not, in the first place, that I am writing for Students, who ought not to go to the lying-in room without being provided with some information upon particulars which, though they be of minor importance, are not without their influence upon the comfort and safety of his patient and upon his own success and reputation. But, more than this, I mention it, because I desire here to enter my solemn protest against the folly, the stupidity, and I might say the iniquity of the fashion which induces so many persons, possessing in other respects good sense and good education, to dress their new-born children less wisely than an Osage Indian mother, or the most savage Esquimaux. A child that is born does not surely belong to its parents until it has attained its sixth year; it seems to me that such a child is but a loan on condition of becoming property, provided it be wisely and safely conducted up to the sixth year of its age; for, one-half of the annual product of child-birth perishes in six years. It cannot be that this amazing mortality is an inevitable concomitant of the state of existence, but it must be a result of ignorance and carelessness as to the hygienical conduct of the neonatus and the young child. It is true that a multitude of children are brought into the world endowed with such a feebleness of constitution, or such hereditary deprivation of it, as to render protracted existence and maturity impossible; but the population abstracts would find an immense augmentation were a sound discretion to preside over the hygienical management of newly-born children. Now in the United States, from Carolina to Maine, and from the Atlantic board to the western limits of Missouri, Iowa, and Wisconsin, little children are dressed in frocks without sleeves, or having only pretended sleeves, which are really nothing more than shoulder-straps, and that, while the backs and bosoms also expose nearly the whole of the thorax. There would be no objection to such habits for children born between the 10th of June and the autumnal equinox; it would even be advisable so to dress the summer children, in a climate notorious for its intense light and heat; but to dress the children in the same manner, whether born in June or February, is an imprudence which no power but that of Fashion could compel sensible women to commit. But Fashion has a power that often transcends the dictates of wisdom and of common sense.
I wish that in this volume the Student should learn that, although I have invariably, for a long series of years, combated, as far as in me lay, this vicious custom, I have found a few sensible mothers who would listen to and obey my injunctions, but I have found a vast number of children to suffer, and multitudes to perish, from their disregard of the dictates of common sense. I beg the Student therefore to take the matter into his serious consideration, and satisfy his own judgment upon the question, whether a child is safe, the whole of whose tender extremities are exposed to temperatures approaching to and sometimes lower than the freezing point.

The arms of a child are supplied with blood mainly by the delicate tube of the humeral artery. Much of the blood returns in the superficial veins; and great masses of it, either upon the skin or in the fingers, to resist the constricting effects of cold, require a power of the circulation probably amounting to what might almost be called pathological reaction. The superficies of the body covering the lungs is also often chilled, for the infant, "mewling and puling in the nurse's arms," always has the whole front of its chest wet with the excretions of its mouth: such a condition can scarcely fail to expose it to attacks of pulmonary catarrh, of tracheal and bronchial inflammations, and coryza.

One of the causes most destructive to health is cold, especially damp cold; and the new-born child ought to be carefully protected against it by dresses, covering its chest up to the throat, and its arms down to the wrists, and its legs and feet.

I believe that in Europe, where the people by long residence have been compelled to learn the nature of their climate, one would scarcely meet with a child, from the royal infant to that of the beggar, that would not be found better protected against weatherly influences than the children of the United States mothers.

The pretext for this improvident exposure of the neonatus is, that it should be early hardened; but I submit to the intelligent Student the question, whether the surest way to harden a child is not that way which shall conduct it through the first six years of its existence without fever, inflammation, or other disease. If a child be properly covered up, and daily exposed to the sunlight in the open air, it will have the best chance of acquiring what is called a hardened constitution: there is little hope that a delicate child, otherwise cared for, shall pass to the end of the first month of its life without some degree of coryza, some pulmonary rhonchus, or some reactive effort of its vascular system, struggling against the constricting effects of cold damp,
from which it cannot be protected except in overheated apartments, which themselves are almost as much to be deprecated.

If a child, protected like a sailor on an Arctic voyage, or like the rudest workman, should be daily sent sub dio, to breathe the stimulating and exhilarating air of the streets or country, and if its diet should be properly regulated, there are few diseases to which it would be liable, save those essential maladies which, to use the language of Willis, "homini omni, soli et semel contigit affici;" I mean measles, smallpox, scarlet fever, whooping-cough, &c., for I am very sure that the catarrhs, the pseudo-membranous croupes, the bowel-complaints, and many even of the cases of tubercular meningitis, are the results of management scarcely wiser than that bestowed upon the child of Ottawa, or the Shoshonee.

With these observations on the dress of the child, I shall dismiss the subject, after proffering one more remark; which is, that the people of the United States seem all to be hurried onward by the universally pervading desire to do what is here called Go-ahead; they are notoriously regardless of the care of their health, and this is attributable, perhaps, to the state of a people, who have but yesterday, as it were, conquered their lands from the swamps and the forest, and have been too busy with progress to attend to the minor concerns of the savoir vivre. I hope that no distant generation will be left to discover some portion of the agreeable to mix with the overflowing cup of the useful in the United States. In that case, the mortality reports will be less redundant with the infant proportion, and the whole female American race will present a spectacle very different from that which we now behold, since it is rare to meet with an American wife, the mother of three children, not already broken and ruined in health, by her servitude to the laws of fashion and the raging spirit of progress and go-ahead.

Let us now turn our attention to the alimentation of the child. It might be enough to say, for the information of any man of sense, that this is a generical process, for the child was made for the breast and the breast was made for the child, and nothing else, in this line, was made for either; therefore, when the child is fed otherwise than at the breast, it is fed by a succedaneum; every succedaneum is, by comparison, infinitely inferior in value and adaptiveness to the generical food which the Author of Nature supplied for it, and so constructed its organs and parts as to fit them to receive it and be developed by it. I shall not take the trouble, in this volume, to repeat the analyses and the observations upon milk which I have already printed in another work, nor indeed does it require any argument to show that, inasmuch as the proportion of oil, casein, albumen, and water in the milk of the
different mammiferous creatures varies according to their genus, so the young of each genus is adapted to the reception of the sort of aliment devoted to its general nature.

It is true that a young child who has lost its mother must be fed and it is better for it to be fed with cow's milk or goat's milk than not at all; but I hold it to be a sacred duty for all those persons whose circumstances admit of it, to provide the new-born child with the milk of a human nurse, and not to expose it to the hazards—I should say the dangerous risks—of distressing illness and impending death, that threaten the great majority of those children that are brought up on the spoon or biberon.

The neonatus comes into the world full of instinctive desires; it will take food soon after its birth, and will satisfy its instinctive cravings to absolute satiety. But I beg the Student to remark that, while the Divine Author of Nature has ordained that children shall be born, he has also ordained that the plenary abundance of their food shall not, as a general rule, be provided for them until the third day after birth. It is not necessary, therefore, to feed the child as soon as it is washed and dressed; I look upon it as a direct flying in the face of Providence, as acting in direct contravention to the law of nature, which is but the command of God, to fill the stomach of the new-born infant with mixtures of saccharine matter, of gruel, or of the milk of quadrupeds; surely, He who made it knows better its true wants than those who, ignoring his wisdom and foresight, make haste to test its digestive powers by these detestable mixtures, instead of waiting the fulness of his own time.

I have warned the Student, however, that hereafter he will encounter much trouble and vexation in consequence of the early and improper feeding of infants under his care, and I exhort him by careful consideration to inform his mind as to the medical duty in such cases. He will never err, he will never go astray as a physician who ascertains clearly the physiological laws of the function or functions placed under his surveillance; and he who in his hygienical ordinances is the best expositor of nature's laws, will be the safest and most successful physician; and it is certain that no human sagacity or skill can ever equal the perfection of those operations that are instituted and effected in accordance with the general nature of the subject of them.

It is a mistake, and it is a grave mistake, to suppose that the neonatus is in danger of starvation because it is kept until the third day on the supply furnished it from the mother's breast alone; for there is always, after the birth of the child, to be found some small quantity of mammary secretion, which, though it be not properly deserving to
be called milk, yet it is possessed in a measure of the properties of that fluid.

The earliest secretions of the milk gland are loaded with a great abundance of colostrum grains, which are to be seen thickly strewn over the field of the microscope, mixed with vesicles and oil-globules, floating in the serum-lactis. Probably the imbibition of this colostrum by the child has some economical relation to its conservation. The colostrum disappears in the course of a fortnight, or at most in three weeks, after the child's birth; I cannot imagine that it is a mere excremential matter, for the breast is not an excremential, it is a recremential organ, and all that it produces is designed for the advantage of the new-born child.

With these views I am quite clear in advising the Student to direct his patient to take the nursling to the breast at the earliest convenient moment. I have many times seen a child drawing vigorously at the breast within a quarter of an hour after its birth, and I believe to take the child to the breast is the most natural thing for the mother to do. To illustrate this opinion, let me invite the Student to consider the circumstances that might have attended the apparition of the first-born of mankind. The common mother of mankind had perceived the strange sensations and modifications of her form, dependent upon an advanced stage of her first gestation. She resided, perhaps, in some warm sunny valley of the Caucasus, bounded by an amphitheatre of lofty mountains, and enriched with a varied landscape, tinted with every hue and form of tree and flower and grassy mead. A transparent fountain arose, perhaps, near the bower, in which Adam had left her sleeping at the uprising of the morning. He may have climbed some lofty, distant cliff to gather for his bride its Alpine blossoms, or return, loaded with fruits for the object of his tender care. In the mean time, she is seized with the pangs of the first human travail—the terrible fulfilment of the curse on her early disobedience; alone, unaided, in a purely natural state. With that inherent health and strength which we may conceive of as appertaining to a creature which had issued perfect from the hands of its Maker, she advances through the unknown conflict, and, at the moment of its consummation, becomes insensible from the keenness of her anguish. In a few moments she is recalled to her senses by the voice of the new-born child; and, raising her languid head and inclining her bending body feebly supported upon the elbow, she perceives the helpless child of her bosom lying upon the grassy floor of the bower near her. It is not necessary to paint, indeed, it is impossible to imagine, the intenseness of the parental emotions which must have now agitated her bosom; these,
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instinct alone, would prompt her to put forth her hands and lift her first-born from the earth on which it lay weltering. She would take it up in her hands, her forearms were fashioned that they might be its cradle, its face would fall against her bosom, and it is probable that but a few moments elapsed after the birth of the first-born, until his mother experienced the sensations which only a mother can know, who pours the rich nutritious stream of life out of her own breast for the sustentation and comfort of her new-born offspring. It is perfectly natural, I repeat, that a mother should take the child to the breast at the earliest possible period after its birth. Every human direction and counsel in contravention of this most evident law of nature must be erroneous, save when it is founded upon views relative to the actual state of the mother or child, as setting aside, for the moment, the operation of those natural laws.

Hence some information should be given to the inexperienced mother or nurse in regard to the alimentation of the neonatus. I believe that pure instinct is more unerring than reason, and a better guide in all those cases in which instinct is designed to preside. I therefore look upon it as a tyrannical thing on the part of any physician to prescribe precise intervals between the applications of the child to the breast. I have no idea that any physician can be competent to decide upon the degree of activity of the digestive powers of any young child. The principles of conduct here, are principles to be derived from a knowledge of the wants of the child: a child may want the breast again in two hours, or it may not want it again in six hours. It is therefore preposterous on the part of the physician to say, as I have heard him say, that the child must be applied to the breast every three hours, or every four hours, according to his unerring wisdom. I advise the Student to direct the child to be fed when it is hungry, and allow it to be governed, as to the quantity it takes, by its instinct, which is superior in this matter to his reason.

It is probable that the child within the month, whose stomach can scarcely be supposed to hold, when perfectly satiated, more than two or three fluidounces of milk, will be able to digest and discharge the major part of this quantity into the duodenum, in the course of some three hours after its assumption; but it is probable that the feeling of hunger will begin to return long before the organ becomes completely empty. There are but few new-born infants that are incapable of rejecting a part of the ingested milk; the stomach in this way relieves itself of any excess, which the appetite might induce it to swallow. I have no doubt that a considerable portion of the ingested milk passes as milk and not as chyme through the pylorus. These considerations,
together with observation of the facts, have induced me, in general, to say that the child might be applied to the breast about once in three hours; but I am far from prescribing three hour intervals as an absolute rule of conduct, and I have no objection to see the child again applied to the breast within two hours after having thoroughly satiated its desire for food, for I repeat, I rely upon its instinct, which was provided for it before the invention of Physic and Surgery.

The dental formula of animals is the index to their nature, especially to the nature of their alimentation. The state of its mouth is sufficient to make it apparent that the child should be fed upon fluid aliment, up to the time at least of the establishment of its dental apparatus; and nothing could be more stupid than the conduct of those that feed young babies with bits of fat ham, minced chicken, and other articles of food for which the child does not become fitted until the period when nature announces it to be so, by the establishment of an apparatus for mastication.

As a general rule, the child ought to be nursed at the breast until it is twelve months old; if the twelve months should happen to elapse about the beginning of June, it ought to be kept at the breast until the autumnal equinox, since experience declares that in the United States very few children can be severed just at the outbursting of the summer heats, without becoming subject to some degree of digestive derangement, which, when once begun, is not readily removed while the child is nourished artificially, but which either does not attack, or is readily overcome, if the supply be of the kind of food which is natural to it.

As to the nursing of the child, notwithstanding I deem it a sacred duty on the part of the parent to fulfil this obligation, yet it is questionable whether the obligation is not really set aside where the inducement thereto arises from a dangerous condition of the maternal health. If a man marry a wife having a hereditary claim and expectation to perish with pulmonary consumption, it would be better, both for her and the infant, to dispense with the giving of suck. It is probable that the infant has already caught a touch of the taint or the diathesis, almost in the act of conception, and if not then, within the course of the uterine gestation. The sooner all influences of the mother’s life over it shall pass away, the greater is the hope of its escaping the terrible fate before it; and on her part, it may be said that the rudest and strongest health is oftentimes much diminished and shaken by twelve months of lactation; but, for a person having in the lungs the invisible seeds of a tuberculosis, to subject such a one to the exhausting
processes of the long lactation, is to nurture and call them into a fatal activity.

I do not mean, in these remarks, to recommend that the lying-in woman should at once begin to throw back upon her constitution the fluxional movement towards the mammary glands, which can only be normally counteracted by the proper physiological action of the gland. Her own safety exigently demands that she should favor this fluxional movement for a few weeks; but after four or six weeks she ought to let her milk slowly dry away, and provide for her child a wet-nurse of unquestionable qualifications for the end in view. I can conceive that, by proceeding in this manner, a family might cast out of its stock even the tuberculous diathesis, in the course of a few generations. It is melancholy to contemplate the misery which is in store for those who, preferring the enjoyment of their natural and praiseworthy sentiments, turn a deaf ear to the warning voice of experience and prudence.

Counsel, however, is to be given by the physician, who is to be all things to all sorts of people; and it must happen that he shall have to counsel those whose circumstances forbid them to defray the extra expense of wet-nursing. Under such circumstances, the child must be fed; milk is its food, and the best succedaneum for its mother's milk is the milk of the cow—indeed, there is none other easily to be had in the United States; and it would be in vain in this country to recommend either the use of asses' or of goats' milk, which, in various countries in Europe, is abundantly provided for those who may find occasion to employ it.

With regard to the artificial alimentation of the child, if the Student should reflect a moment, he will come to the conclusion that the act of digestion is much assisted by the admixture, with the food that is ingested, of a due proportion of saliva. The saliva, though not so essential in the digestive evolution as the liquor gastricus, is an indispensable agent in the act. A child that draws its milk from its mother's breast by the suction power of its mouth may be almost said to masticate it, and in doing so it causes a stream of saliva to pass into the mouth, which is swallowed along with the milk. The proper excitant of the salivary glands is first, perhaps, the presence of alimentary matters in the mouth, and secondly, still more powerfully the motion of the tongue and cheeks and jaws, in eating. Now, a child that is fed from a spoon may be almost said to have the food poured down its throat without swallowing it, and the same is true of the infant that takes its aliment from the edge of a bowl or cup. It is far more convenient and proper, in all cases of artificial alimentation, to
simulate as closely as possible the natural functions, and I believe
that the child will digest its gill or half pint of food more safely and
successfully, if it be taken through the biberon than if taken out of a
spoon or cup. Let the Student give ample attention to these considera-
tions, and judge for himself whether the remarks be well founded or
not, and thereupon base his professional counsel.

Without going here into a comparison of the different kinds of food,
I beg to request the attention of the Student to the opinions which
I have expressed upon this subject in my work upon Diseases of
Children.

Of the Navel.—The navel being dressed in the manner heretofore
described, it is usually left thereafter to the care of the monthly nurse
or attendant, and the physician is rarely called upon to interfere, except
when it becomes the seat of some diseased action.

The remainder of the umbilical cord, left after the severance of the
child, soon begins to dry; the water of the Whartonian jelly contained
in it escaping through the inorganic pores or crevices in the amniotic
coat. The vein usually contains a small coagulum of blood, and the
arteries become collapsed and entirely desiccated. In the course of
from four to seven days, the cord has become so dry and thin as to
resemble a piece of transparent yellow horn; the absorbents at the line
of the demarcation early commence to cast off the slough, by establish-
ing a crack or fissure all around its root: this fissure, growing deeper
and broader from day to day, allows the desiccated vestige to fall away,
leaving a small spot of raw surface, often not bigger than the head of
a pin; for most of the wound becomes incarned or cicatrized as the
process goes on.

While the child is in the womb, and even at the moment of its birth,
the navel protrudes, often to the length of half an inch; but the two
arteries, whose cut ends are attached near the surface of the new-formed
cicatrix, act as cut arteries always do, by retracting, and thus serve to
draw the navel inwards and downwards in the direction of the urachus.
The remainder of the vein, which becomes a cord passing along the
edge of the falciform ligament of the liver, is also, but in a less degree,
retracted. These vessels serve in this way to draw the navel inwards,
and to make the dimple of the umbilicus; but the deepest pit of the
dimple will look downwards towards the bladder, for the retractility of
the arteries is greatest. When the retraction thus effected is perfect,
the tissues are drawn strongly inwards towards the inner aspect of the
belly, and the vacuity in the linea alba, constituting the umbilical
ring, becomes perfectly closed; but if this retraction be incomplete,
then a plug of tissues contained within the circle of the umbilical ring prevents its absolute closure, and leaves the child liable to be affected with exomphalos or pouting of the navel.

It is clear that, in order to aid this retraction and complete it, a proper compress should be adjusted over the umbilicus and retained by the belly-band, whose use ought to be continued as long as its use is indicated. If the child is quiet, and little given to crying and straining with tenesmus, and if the dimple of its navel be perfectly well-formed, the belly-band may be left off at the end of the month; but the least disposition to protrusion, or a wintry season, furnishes motives for its longer continuance.

Of the Meeonium.—The meconium of the child is a dark, viscous, green, diffusible matter, which is contained in its colon and rectum at the period of birth.

The quantity is sometimes very great, and the first alvine discharges consist wholly of this material. Three or four of the first evacuations serve in general to carry it all off; occasionally, it is so adhesive as not to quit the surfaces of the bowels: perhaps it is lodged in the cells of the colon, so that the bright bile-tinted stool of such a child, seen upon its napkin, induces a belief that the meconium is all purged off, whereas subsequent dejections show that no inconsiderable quantities have been detained in the intestine.

When the meconium comes off freely, and seems to be entirely discharged, giving place to excretions of a healthy hue and consistence, no medical precautions can be deemed necessary; but if the child is uneasy, crying, fretful; affected with griping pains, which are betrayed by its voice and by the frequent flexion and extension of its lower extremities, with an appearance of passionate impatience, and especially if some portions of the meconium seem to linger upon the napkins one after another, we should have reason to suppose that the surfaces are still vexed and irritated by this excreted matter, which ought to be removed by small portions of castor oil or some other convenient aperient.

Children that feed many times a day will generally be found to require several alvine dejections per diem. A child that satisfies its instinctive desire for food generally does so by filling the stomach until it is quite distended, and it will often happen that some portions of the ingested milk will pass off through the pylorus into the intestinal canal too early to have been subjected to the influence of the gastric liquor. Such portions of milk will, therefore, appear upon the napkins in broken or granulated coagula of a white color.
Most children, after filling the stomach to distension, enjoy the happy faculty of regurgitating the excess, so that the stomach soon becomes relieved of its over-fulness, retaining less than it has received, and subjecting it perfectly to the gastric digestion. A child that in this manner rejects the superfluity, and completes the digestion of what remains, will have small residue of its digestions, and therefore will have fewer alvine discharges, which shall also be smaller in quantity than those of the child a portion of whose undigested milk passes into the duodenum and jejunum.

Without being able to speak positively from careful observation, I venture to state that the neonatus in perfect health has three or four changes of its napkin daily, and I conceive that this is not too great a number; at the same time, I presume that a child might be very well, having only one dejection per day, provided it is known to have the faculty of regurgitating the superfluous ingesta, and provided also it has the appearance of enjoying a complete health.

I beg to inform the Student that he will meet with a good many children which shall have eight, ten, sixteen, twenty dejections per diem, and that he will often be called upon by anxious parents to prescribe for such seeming diarrhoea. The case to which I allude is not a diarrhoea; it is a case in which a child, nourished at a free and abundant breast, fills its stomach again and again with a gastromorphous clot of milk, a major part of which, being comminuted by the contractions of the organ, is driven off undissolved through the pylorus, because the child has not the power to get rid of it by regurgitation.

When I am called upon to give counsel in such cases, I do not always take for granted that the child is sick because the nurse or mother tells me it is so, nor do I admit that it has a diarrhoea because it has twenty stools per day. Under such circumstances I have often said, let it alone, do not interfere with the case at all, except by regulating the amount of its food; do not give it such frequent opportunities to suck, and judge carefully when it shall have got what is necessary for it, and then put it away. If you give medicine to stop its diarrhoea—which is not diarrhoea, but a result of repletion—you will make the child sick, for if the child continues to live in the same way, so as to require twenty napkins per day, and you prevent the action of its bowels, by means of some astringent or narcotic medicines, you will make it really ill—it is a case for hygiene, not for therapeia. It has twenty evacuations daily; well, be it so. Examine the dejections, and you will find that they consist almost wholly of the whey of milk. The child keeps the curd and digests it—but the whey is more than
it can keep, and so it passes off by the bowels in the form of what you call diarrhoea. But it is not diarrhoea, it is whey.

I do not fear that I shall mislead the Student by the above observations, because, if he be a man of sense, he will judge for himself, and not from a book; he will inquire what is the nature of these dejections which are accused of being diarrhoea, and if he should find that they are such as I have above described, he will perhaps remember my words, and act in accordance with the indications that I have pointed out. If the stools consist of masses of slime—if they are altogether bilious—if they give evidence of an excessive acid saburra, then he will inquire into the particular wants of the case, and prescribe accordingly.

The mucous, the bilious, or the acid saburra may require only a teaspoonful of castor oil, a small quantity of rhubarb, a portion of magnesia, a half grain of calomel, or calomel with chalk. Perhaps he will be enabled to fulfil the therapeutical indication by prescribing a portion of lime-water and milk, or a little soda or potash mixed with water alone, or mixed in infusion of chamomile or some other bitter or aromatic garden herb. Possibly, he may find the fault to consist in a hyperneuric condition of the muscular apparatus either of the small or of the large intestine, and he will correct such an hyperneuria by means of an anodyne draught. An anodyne draught for the new-born infant should consist of half a drop of laudanum in a teaspoonful of water. To give half a drop of laudanum, let him direct the nurse to put two teaspoonfuls of water into a cup, and add one drop of laudanum thereto, which, being perfectly mixed and compounded, permits him to give, in one teaspoonful of the mixture, just half a drop—the other should be thrown away.

Sometimes the new-born child, instead of being troubled with too many dejections, is affected with costiveness. This costiveness is overcome either by a suppository of molasses candy, of a bit of castile soap, or a camel’s-hair pencil dipped in castor oil, and thrust just within the grasp of the sphincter muscle. It may be remedied by an enema of tepid water, or water quickened with a modicum of salt, or molasses or castor oil; or the child may take a teaspoonful of a weak infusion of rhubarb, or a little magnesia, or a little rhubarb roasted in a saucer until it is slightly browned, or, what is better than all, a pinch of pure precipitated sulphur mixed in water sweetened with honey or honey of roses. Small portions of sulphur, mixed with honey water, appear to me to operate upon the neonatus more kindly than any other therapeutic agent, in this peculiar case; and the use of it, continued for a few days, often serves to remove an habitual disposition to costive-
ness. The Student should judge, however, in the cases committed to his care, as to the cause of the constipation. He knows, or he ought to know, that the bile furnished by the liver is the natural excretory, and that, if that bile should be in just quantity and of due quality, it should take the place of all rhubarb, senna, and purgative drug.

If therefore, upon inquiry into his case, he discovers a deficiency in the quantity of the bile, or such modifications of its tint and other qualities as seem to call for his therapeutical intervention, let him judge as to the precise nature of that intervention. Let him ask himself what is the source of the blood that gives rise to the secretion of bile, or from which the bile is secreted, in the eliminating apparatus of it, the liver. He will see that the whole of this blood came from the aorta, through the coeliac and two mesenteric arteries; that the chief torrent of it, after being passed through the capillary circulation of the intestinal tube, hath been collected again by the radicles of the great portal vein, which lets it into the liver to be distributed through the hepatic branches of the vena portae to the capillary tufts in the acini, whence it is carried off again by the nascent radicles of the hepatic veins, which are to discharge it into the cava—and so his question is answered, for he will scarcely believe that the hepatic artery is the secreting tube, but only the nutritious artery of the liver. When, then, he finds a child disordered as to the action of its bowels and liver, I hope that he will cast his eyes upon this great system of what the ancients called the mesaraic circulation, so that, inspecting the whole field of it, he may discern in what point of it the pathogenic principle resides.

I should think that he could not but look upon a hyperaemic condition of the capillary system of any large portions of the alimentary tube as matters important for the performance of the secreting functions of the liver; and see that retardation in the movements of the great intestinal portal system, or of the great hepatic portal system, cannot but be regarded as giving rise to sufficient causes for those modifications of the functions of the liver which he desires to cure. Under these views, it will not always be for him inevitable to administer mercurial remedies for slight derangements of the bile. He will rather provoke the peristaltic fibre to greater or to renewed action, with a view to remove those embarrassments of the portal or mesaraic circulation which he shall accuse of causing the bilious disorder, and he shall find that a teaspoonful of castor oil, or a pinch of rhubarb, or a modicum of magnesia, or an innocent dose of precipitated sulphur, is quite as effectual, and abundantly more safe than the vaunted power of the mercurial dose in these affections.
It appears to me that in the United States there is an indissoluble alliance between the word *liver* and the idea *calomel*, and that the notion of the alterative power of calomel springs spontaneously at the least suggestion of an hepatic or bilious derangement. I do not deny that calomel is a purgative, nor that it produces the most distressing nausea when taken into the stomach; nor that it may therefore, upon proper occasions, be rightfully administered, even to young children; but an examination of the circulation and of the innervation in those parts which stand before the gate of the liver, and which serve, as it were, as propyla, admitting the torrents of circulation into it, out of which the bile is to be taken by it, ought clearly to point to states of those parts, I mean the mesentery, the mesocolon, and the alimentary canal itself; as often the seats of those pathogenical influences which are discoverable only in their effects in modifying the bile.

I beg the Student to get the baby through the month without mercury, if possible; since, though I deem mercury an admissible remedy, I consider it a most desirable thing for the young child to avoid its too dangerous and powerful influences—influences capable of making such a profound impression upon the constitution as shall be felt in long after years. For my own part, notwithstanding I have long been laboriously engaged in the practice of my art, I feel very confident that I do not employ one hundred nor even fifty grains of calomel in the course of twelve months; and that my patients are not the worse off on that account; while I myself am preserved from an intolerable anxiety which its administration always excites in my mind.

*Of the Gum.*—Children coming into the world—issuing from the soft and unctuous waters by which they have been surrounded—are first washed clean, and then exposed to the stimulating effects of the atmospheric air; and are, then, covered with clothes, all of which things serve to irritate the tender and sensitive outer covering of the body, the derm. Moreover, the first copious indraughts of atmospheric air, changing the blood and converting it into tenfold more oxygeniferous streams, must have the effect almost of an intoxicating inhalation, like nitrous oxide, upon the child. The corpus mucosum of the skin becomes instantly reddened after birth, and, in many children, so red as to present the appearance of engorgement or inflammation; and there are not a few of them, indeed, in whom, in this first burst of dermal circulation, the hyperaemia is so considerable as to be followed, in the course of a few days, by desquamation, like that which succeeds to an attack of measles or scarlatina. We should not be surprised, therefore, to observe slight inflammations and eruptions of the superficial
tissues. There are few children, indeed, who fail, in the first three or five days after their birth, to be attacked with a slight papular eruption which is called red gum—a case in which a central papule is environed by a red aureole. It requires no particular treatment, since, like a vaccination, it tends to cure itself. Common custom and usage, however, prescribe the administration of weak aromatic infusions, which are supposed to possess a diaphoretic quality. Infusion of catmint, infusion of fennel or anise, infusion of saffron, &c. &c., are commonly resorted to, and as they do not much harm, it is not always, perhaps, the province of the physician to object to their exhibition.

This red gum, or *strophulus intertinctus*, differs from the other sort, *strophulus albidus*, which exhibits a larger papule, more nearly resembling the blister of varicella, though much smaller than the varicella. It is not surrounded by a red aureole, like the *strophulus intertinctus*.

In children affected with either form of these eruptions, it is highly important that the skin should be frequently powdered with some proper fecula, and there is none preferable to that of the arrow-root. The application of the fecula, under such circumstances, appears to me to possess a remarkable power to appease the hyperemic and hyperneuric condition resulting in this form of eruption.

**Sore Mouth or Aphthæ.**—In the course of a few days after the birth of the child, it is common to find it a little more sleepy than ordinary, and to hear the nurses say, "It is sleeping for the sore mouth;" and soon after, upon examining the interior of the lips, the gums, and the tongue, they are found to be overspread with very minute white flakes, that look like small curds of milk. These are aphthæ, or the thrush, or the child's sore-mouth. The white deposit consists of a small quantity of excretion, albuminous, or, possibly, fibrine of the blood, which is held in contact with the surfaces from which it exudes, by a delicate film of epithelium, so that, with the finger covered by a bit of rag, the white speck cannot be wiped away. In a short time—that is, in the course of a day or two—the pellicle of epithelium gives way and the crust falls off, leaving sometimes a minute sore, and sometimes a renewed surface of epithelium, from which the white crust has fallen away.

Of course, this malady is the result of inflammation of the corpus mucosum of the interior of the mouth and lips, and it is to all intents and purposes a true stomatitis, or mouth-inflammation. In nine cases out of ten it cures itself, and it is, probably, in its nature very like the *strophulus intertinctus*, or *strophulus albidus*, of which I have just
spoken, which are affections of the mucous body of the derm, whereas this is an affection of the mucous body of the mucous membrane.

It is usual in this case to accuse the child as laboring under an acid saburra, and to furnish it, in consequence of that accusation, with a dose of physic, which for the most part it does not really want. But, inasmuch as this mild stomatitis may rise to a considerable height, becoming, in fact, a general and extensive inflammation of the tissues within the mouth, extending backwards into the fauces, and from the isthmus faucium into the throat, it is worthy of attention on such occasions, and should be treated in conformity with its nature.

The custom, among physicians and nurses in this part of the country, is to attack the local malady by means of portions of borax and powdered sugar, of which a pinch is frequently to be put upon the tongue of the child, and is supposed to have sovereign power as a remedy for the malady. There is little objection to the use of the biborate of soda; and it answers a good purpose, being a substitute for severer and useless remedies: now and then, when the stomatitis rises to a great and dangerous height, it is useful to wash the mouth of the child with a mixture of lime-water and fine Peruvian bark in powder; or to touch the irritated surfaces with a camel’s-hair pencil, dipped in a weak solution of nitrate of silver, of a strength ranging from one grain to two or three grains to the ounce of distilled water; or a solution of sulphate of copper in combination with sulphate of quinia. Two grains of the former and half-a-dozen of the latter, in an ounce of water, furnish a mixture which may be efficaciously applied by delicate contacts of the camel’s-hair pencil to the affected parts. If fever arise, or saburra or disorder connected therewith, let the Student bethink himself of the efficacy of his doses of calomel or magnesia, or aperitive medicine of whatever kind.

There is another kind of sore mouth which looks like this, and which is called muguet, and which is, I think, not so often met with in this country, as by some European practitioners. It is supposed to be a vegetable substance attaching itself to the interior of the mouth, and sporiferous in its nature, so as to be capable of greatly extending itself when once planted there. It differs from aphthae or thrush by being uncovered, or having no investment of the stomal epithelium. I am not familiar with it, and refer the Student to the authorities for further information.

Icterus.—The neonatus is very liable, in the course of a few days after its birth, to be affected with a yellowness of the whole skin
and eyes, and to have the urine so stained with bile as to impress its color upon the napkins when dried from the urinary discharges.

The icterus of the young child doubtless depends upon the regurgitation of bile from the pori biliarii into the returning branches of the hepatic vessels, whereby the whole mass of the blood becomes stained with its yellow coloring material, which begins to appear first upon the colorless adnata, and next upon the whole dermal surface. Such a state of the skin does not imply a primary disease of the liver itself, since there are certain irritations affecting the duodenum, producing some degree of engorgement round about the ductus communis choledochus, and passing up along that tube, which might well suffice to detain the secreted bile in the pori biliarii, and cause its regurgitation in the manner above indicated. A dose of purgative medicine, freeing the stomach, and duodenum, and jejunum from some certain saburra, and relieving them thereby of a troublesome hyperemia, seems to me likely to set the gates of the bile wide open, so that, the regurgitation no longer being effected, the constitution soon eliminates the coloring matter of the bile from the blood, leaving the skin to recover its healthful hue and softness.

My clinical experience, which must have furnished me with numerous examples of these early hepatic derangements, as they are supposed to be, has left with me no painful impression of the dangerousness or the troublesomeness of the affection, which is transitory, disappearing in the course of a very few days.

In those cases in which the inspection of the dejections shows that the bile escapes freely through the ductus communis into the duodenum, I am always willing to wait for the result of such outflowing of the liquid and the spontaneous return of the liver to its normal functional rate. Whenever, on the contrary, I discover whitish or clay-colored stools, or stools tinted faintly with a whitish-yellow bile, I am willing to administer to my patient some doses consisting of the sixth part of a grain of calomel, repeated three or four times a day, and followed by a convenient quantity of castor oil or magnesia, or other approved aperient.

Coryza.—Many young children suffer severely, soon after birth, from attacks of coryza, commonly, by nurses and old women, called snuffles, and, when the attacks are severe, morbid snuffles. Some children, indeed, appear to me to have come into the world giving evidences, with the very first acts of respiration, of the presence of this malady. I do not mean to say that they have coryza before they are
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born; but rather that they are born with certain tendencies which allow coryza to declare itself immediately after birth.

Coryza or snuffles is inflammation of the mucous membrane of the nostrils and air-passages of the head in general, occasioning a great abundance of mucus to be excreted from them; which, filling up the air-passages and obstructing them, causes the child to breathe with difficulty, making a rattling or sniffling noise with every respiratory movement.

Many of the cases, being very slight, and going off after a few days, scarcely serve to attract the attention of the physician, and the wise women content themselves with the usual remedy, which consists, in this country at least, in the application of a little grease or tallow to the bridge of the nose. While it is perfectly true that coryza is in many cases a matter apparently of small moment, yet it is proper for the Student, when he observes its existence in the little nursling, not to pass it by idly and without notice, for it is capable of producing the greatest annoyance in the lying-in room by interrupting the sleep of the baby, and thereby interfering with the repose of its parent, a circumstance always to be deprecated. But more than this, coryza may kill the child outright—a thing to be deplored, in itself considered, and perhaps still more to be deplored on account of its possible influence on the health of the mother, who, in the early days of her lying-in, is easily moved by slight pathogenical causes, which, when they but begin to operate, may have results the most disastrous.

Let the Student, therefore, not idly neglect a case of coryza in the neonatus; but he should extend his watchful care both over it and its hyperesthetic parent. A lying-in woman is not like anybody else, and things may kill her, which, under other circumstances, might pass by her as the idle wind.

I wish the Student to remember that the new-born child has no reason, but only instinct; that it is a purely instinctive creature, and implicitly obeys the provocations of its instinctive nature. It has an instinct to breathe, for which purpose it is supplied with only two respiratory stigmata, to wit, its nostrils. It has another aperture, its mouth, which its instinct teaches it to use only as an agent of its alimentation, not as an agent of its respiration. I wish the Student to understand that, if one should stop the nostrils of a new-born child with two plugs of cotton or lint, so that no air can enter into those respiratory stigmata, the infant will surely die within from one to three days, because its instinct teaches it to breathe through its respiratory passages, and not through its mouth. I am sure that the subject of such an experiment would persistingly close its mouth or its isthmus
faucium, and perish under vain attempts to continue its respiration through the closed up nostrils.

When children die from coryza, as they not unfrequently do, they die in the manner just pointed out; and I adjure the Student, who shall read this passage, to give his careful and candid attention to the doctrines set forth in it, and, looking upon the child that is seriously ill will coryza, see how, after making repeated attempts to aspire air through the nostrils, it suddenly starts forward, throwing out its hands with an appearance of agonized distress, and then, opening its mouth widely, suddenly makes a full and complete aspiration of air, which, dispelling for a moment the sense of suffocation, permits again the renewal of its vain attempts to breathe through the natural openings. If it had reason to guide it, as a man has, it might breathe by the mouth, with perfect facility throughout the most dreadful attack of coryza, even coryza maligna; but it has only instinct for its guide, and that instinct teaches it to breathe through the nasal openings.

I will take this occasion to remark that loss of life from coryza is to be observed sometimes in children many months old, and that a child even over two years of age may be lost in this way, as I have learned by disastrous clinical experience; and if the Student who reads these passages should find any hesitancy in his mind to admit the truth of my explanation, I believe that all doubt would vanish from him if he would please to make the following experiment. Let him compress the alae nasi together with his thumb and finger, and then make half a dozen consecutive attempts to breathe, keeping his mouth shut at the same time; he will find that the effort to send down the diaphragm and expand the thorax will produce within the whole chest a deep feeling of distress, amounting almost to pain. But let him repeat the attempts five or six times consecutively; and then, while making the last attempts, suddenly open the mouth and permit the air to rush in a torrent into the air-passages, he will have the sensations which I attribute to the young infant, when, after its repeated attempts to breathe through the nostril, it starts forward, throwing its hands wildly abroad, and filling its lungs with air through the opened mouth.

If the Student, after experiencing these sensations, will reflect upon the effect of such efforts, repeated through two or three consecutive days by a tender infant, just born into the world, he will agree with me that stopping of its nasal passages is a thing greatly to be deprecated. I do not mean him to understand that in ordinary cases of coryza the child takes no air through its respiratory stigmata, for it does get that small portion on which it subsists in that way, up to the
period, at least, in which the apertures, having become totally obstructed, compel it at last to make the sudden and convulsive aspirations through the mouth which I have attempted to describe. But the difficult and interrupted aspiration of air through nostrils only partially obstructed is sufficient to diminish the amount of oxygen breathed upon the blood, and the torpid and imperfect innervation produced by the imperfectly oxygenized blood in the vessels of the brain is followed by various derangements in the action of the organs whose force depends upon the regular supply of the *vis nervosa*.

A young child, then, laboring under a considerable coryza, will have carboniferous blood in the systemic circulation; it will be pale, languid, and unhappy, and is always exposed, in consequence, to attacks of pulmonary or cerebral or abdominal disorder. I look upon a child, whose nostrils are half stopped up, whether by mucus, or by submucous infiltration, as in a state analogous to that of an infant laboring under a moderate degree of pseudo-membranous laryngitis: for the one or the other equally prevents the aeration of the blood with its normal amount of oxygen, and all the consequences of such a state must result.

I ask the Student whether the constitutional disturbance arising from such a degree of disorder as exists in the Schneiderian surface in a case of coryza could possibly be so disastrous, were it not for the accidental interruption occasioned by it to the oxygenating power of the respiration. I should think that an inflammation ten times more violent would be incapable of producing so great an amount of constitutional disorder through any other means than those above alluded to; for the reaction of the heart and arteries occasioned by it, and the distress of the nervous system occasioned by the perception of it would be nothing—I was going to say less than nothing—were it not for the accidental interruption to the oxygenation. Therefore, I repeat that the slightest attack of coryza is worthy to be regarded.

But the question arises what shall we do for the cure of this case; how shall we free the Schneiderian membrane from its hyperæmia and hyperneuria; how shall we prevent its follicles from furnishing this excessive amount of mucus, or how shall we take away the submucous infiltration, which causes the cavities to collapse and at last to close them? Will the vulgar remedy, greasing the nose, have this effect? Certainly the Student cannot rely upon such a therapia as that. Will he purge the child? Will he give it a warm bath? Will he apply a leech within the margin of each nostril? Will he give it diaphoretic remedies? Will he regulate the temperature of its apartment? Will he cause the aperture of the nostril to be kept free from
the scales and incrustations produced at the orifice by the desiccation of the mucus that falls upon the very margin of the nostrils, and sometimes forms tampons or plugs running far back into the cavities of the head? It is well if he will do all these things; but experience, the best of teachers, will show him that such remedies have little power over the disorder, and that the coryza goes on notwithstanding all his attempts. Will he produce a useful therapeutical impression upon the mucous passages by touching them with a delicate camel's-hair pencil, dipped in proper solutions of nitrate of silver or other metallic salts? Even these things fail, and often fail, but there is a treatment which experience, the best of teachers, has taught me never fails. I scarcely dare, in a formal work, pretending to a character of science, to say what this treatment is, and yet I must, with undoubting confidence recommend the Student to adopt it.

When a new-born child is seized with a coryza that attracts my attention, I invariably direct a skull-cap made of flannel, to be so constructed as accurately and perfectly to fit the form of the cranium. I direct this cap to be fastened upon its head, and to be left there for three days and nights, and I always feel sure that within about that time the coryza will have totally disappeared. I mean to say that the cap should fit the head closely, not loosely, for I desire that the air of the apartment should not be allowed to touch the scalp. If the Student will try my method and fail, he can but be disappointed, which, I am confident, he will not be; if he adopts all or any of the other remedies that I have hinted at above, he will surely meet with disappointment many times—by my method perhaps never. It is hardly worth while to reason upon this subject, but let him read Dr. Denman's account of coryza, and the accounts contained in the treatises on the diseases of children, in order to learn how he can, in a better manner than that I have pointed out, and more effectually, counteract the pernicious existence and tendency of this troublesome malady.