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ROSEN VON ROSENSTEIN, N.

Presented to the
THE *Medical Society*
DISEASES of
London
OF
CHILDREN, *by*
AND THEIR *J. Chamberlaine*
REMEDIES.

BY THE LATE
NICHOLAS ROSEN VON ROSENSTEIN,
FIRST PHYSICIAN to his SWEDISH MAJESTY, and
KNIGHT of the POLAR STAR.

Translated into ENGLISH
By ANDREW SPARRMAN, M.D.

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T H E

AUTHOR'S PREFACE.

THE Royal Academy of Sciences having been pleased to order my writings on the Diseases of Children, to be printed gradually in their Almanacks, are now desirous of seeing them together in one Work, thinking by this means to render the public some service, especially as the first year's Almanacks are not now to be had. Had it not been the desire of the Royal Academy of Sciences, I should not have presumed the undertaking of so nice a task, as the composition of this little work. But the respect I owe that learned body, together with the benevolence with which the public have received my Essays in the Almanacks, encouraged me to continue in the same manner with every other disease incident to Children, sincerely wishing by this means, to be of service to my country, and also to answer the intentions of the Royal Academy of Sciences.

T H E

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T H E

TRANSLATOR'S PREFACE.

THIS work on the Diseases of Children is translated from the newest *Swedish* edition of the year 1771, that being the language in which it was originally written.

The Author, lately deceased, Archiater *N. Rosén von Rosenstein*, ennobled and knighted, and, what is still more, universally admired and beloved for his merit in the physical science, was the oldest and most experienced practitioner of physic in *Sweden*, and favoured the public with the present performance at the desire of the Royal Academy of Sciences; he being especially famous for his great knowledge of, and success in curing, the diseases of children.

The cures here laid down are founded not only on the Author's own extensive practice and reading, but also on a number of practical observations communicated to him by other eminent physicians of the metropolis and the provinces of *Sweden*; many of these gentlemen having been the Author's pupils when he was formerly professor at *Upsal*, and having had the opportunity of consulting him ever after his being called from the university to court, which happened many years ago.

The

The judicious Reader himself will easily perceive the treatise very well deserving the high encomium it is distinguished with by the famous Dr. *Tissot*, professor *Baldinger*, and several others.

The worthy Author has made the *Swedish* original of more universal use to his country by rendering his work intelligible even to people of an ordinary capacity; the Translator has likewise endeavoured to make its utility equally extensive among the *English* public. May it therefore prove beneficial to *British* children, a comfort to their parents, and conducive to the happiness of mankind in general!

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T H E

T H E

DISEASES OF CHILDREN,

A N D

T H E I R R E M E D I E S.

C H A P T E R I.

O N N U R S E S.

A CHILD ought to get a sufficient quantity of good nourishment, if it is to thrive well. The best food for it is, no doubt, the mother's milk. We therefore find, that children thrive well, suckled by their mothers milk, tho' that should not stand all the proofs which are required towards approving that of a nurse. Thus, if another child should suck the same milk, it would immediatly grow sick. For this reason then, mothers ought to suckle their own children; by this they gain a great deal: they will at least have easier-deliveries, avoid several diseases, as the milk-fever, *purpura puerperarum*, and inflammation of the womb, by a translation of the milky matter; also *bubones lacteæ* in the groins, which often makes them lame. They avoid likewise the *fluor albus* or whites, which often arise from such causes. *Vide Mr. Faber, lib. cit. p. 65.* These motives ought to induce the mother to suckle the child herself, at least during those weeks she is obliged to stay within doors, especially as the mother's milk carries

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2 DISEASES OF CHILDREN,

off the *meconium* better than any thing, frees the child from many disorders, and makes it acquire her own temper and disposition. Therefore we see, that young lions who have sucked a cow or a goat, have by this means been as it were tamed : and dogs on the contrary, who have sucked a she-wolf, have become beasts of prey.

But should it happen, that the mother has no milk, her nipples either being too small, or too large, too short, too hard, or too sharp pointed, that the child cannot hold them fast in its mouth to suck them : or if she should have sore ones, or herself be too sickly or weak, having the consumption, gravel, or any other disorder, by which the milk thus affected might be propagated to the child : or if she is of a temper too easily moved by joy or sorrow, or in a situation where she cannot avoid being often exasperated : then she ought not to suckle her child, but procure a good nurse for it. Such a one ought to be naturally of a serene, chearful, sweet, and virtuous disposition. She ought to be between 20 and 30 years of age, to have lain-in a little before the child's mother, and also to be used to the nursing of children ; she ought to be of a strong constitution, and not afflicted with any hereditary disease, that might be transferred to the child : free also from the scurvy : therefore her gums ought to be well examined, whether they are hard and firm. But above all other things, care should be taken, that she has not any venereal disorder, scabs, *herpes*, hard glands, &c. as these are indications that her humours are corrupted.

A fat nurse is preferable to a lean one ; but if one can be found, that nearly corresponds with the constitution of the child's mother, she will answer still better ; she ought to be able to suckle the child at each breast, the nipples of which should be of a middling size. These ought also to be irritable, so that they grow erect by being gently stroked with your finger, which is a necessary quality to their giving milk. She ought to have good milk, and a sufficient quantity of it.

Its goodness may be tried,

1. By its colour, which ought to be white or rather bluish.

2. By

2. By the smell, as it should be void of any.

3. By the taste, which ought to be quite sweet, and not by any means salt or bitter, or in the least similar to that of a cow that has just calved, changing to what is commonly used. Its most healthy taste is like cows milk diluted with a little water, and sweetened with a little sugar.

4. By its consistence, because when thin it is always better than when thick: therefore a drop of it on your nail, ought easily to run off on inclining it: even on shaking the finger hastily, there ought not to remain the least white streak on your nail.

5. By the touch, because not any pain ought to be felt, on letting a drop of it fall into the eye.

6. With rennet, for if the milk gives much cheese on coagulating it, you may judge it to be good for nothing.

7. By keeping it for several hours in a glass, because if it then gives much cream it will also prove bad. The same is to be observed upon weighing the milk, for the more cream it gives the lighter it will be found.

8. By the age, because the older the milk is, the thicker and more unhealthy it will be; therefore, when the choice of two nurses can be made, the one of 30 years of age, and her milk one month older than that of the mother, and the other at the age of 20 years only, and her milk 6 or seven months old, we then ought to give the preference to the first, provided they both agree in other circumstances. If we cannot procure any nurse, and the mother cannot suckle her child, then we must accustom the child to suck by means of a little instrument, or sucking bottle (called *Biberon*), which is universally used in Easter-Bothnia with great advantage; but this machine ought always to be kept clean: it is to be made of horn, the smaller end of which may be fastened to a tanned skin of a cow's teat, or if that is not to be procured, we may use any other thin skin, pierced with many small holes. Pour in this as much cows and goats cream (unboiled) as you think the child will use at once, dilute it with water, and sweeten it with a little

sugar. As the child grows older, we may give it more food, as shall hereafter be mentioned.

It is not only necessary to procure a nurse with the above-mentioned qualities, but she ought also to observe a healthy and regular diet, in order to make the child thrive better; therefore it is necessary that she should have a large and airy chamber, free from any draught of air; it ought to be equally and tolerably kept warm, often swept clean and neat, in order to avoid any bad smell, as also to prevent the nurse and the child from getting the itch; she ought not imprudently to expose herself to the cold; and except when it cannot be avoided, she ought always to cover her breasts very well, and if they should at any time grow cold, then she ought to omit suckling the child until they are grown warm again, otherwise the child will get the catarrh at the nose, and cough: however in my opinion, she ought not by any means to keep continually in the chamber with the children; on the contrary, she ought to have free access to the other rooms whenever she pleases, and there perform any kind of gentle exercise. I have myself known the milk of a good nurse spoiled by such a confinement, which by moderate exercise in the house, from one room to another, was restored again in a fortnight's time. She ought to have a sufficiency to eat, and that at certain hours: small beer may be drank at pleasure, but this should be neither sour, new, or stale, and not to be drank, by any means, when drawn over night. Wine, brandy*, ale or coffee, ought by no

* A child perfectly fresh and healthy, and having also a healthy and chearful nurse, thrived always very well in town, but when it was sent to pass the summer in the country, it grew weak and sick every Sunday: I could not conceive the reason of it, thinking the nurse lived on those days, the same as on other days: she never got brandy to my knowledge, as is customarily given in Sweden to other servant-women; at last I found out, that some of her fellow-servants gave her part of theirs, which being prevented, the child was as well on Sundays as on the other days.

means

means to be given her ; tea ſhe may drink with milk, but ſeldom ; the veſſel out of which ſhe drinks, ought every day to be cleaned, and to be made of ſtone, rather than any thing elſe. Some are uſed to put meſſaſſes in the nurſe's drink, but I have known it occaſion a great flux to the children. With reſpect to food, there is no occaſion for ſo great a nicety ; the food which the nurſe is moſt accuſtomed to, and likes the beſt, is generally the moſt ſuitable ; ſhe ought not to eat any thing ſour, or ſeaſoned with onions or garlic ; but if ſhe eats any peaſe, turneps, or cabbage, the child will generally be troubled with wind.

The nurſe ought every day to have a ſtool, and immediately to let you know if ſhe is coſtive, which ought to be remedied as ſoon as poſſible, by a ſuppoſitory prepared of two drams of honey and half a dram of ſalt ; this is to be dipped in oil of olives. We never dare give purges to a nurſe, becauſe if her breſts are full at the time ſhe takes the purge, and ſhe a little time after is obliged to ſuckle the child, the medicine will have no effect upon her, but purge the child, which generally by this means loſes its life. If the nurſe gets a flux, you give half a dram of rhubarb, and eight hours after if neceſſary, a ſmall teaſpoonful of *Elect. e ſcordio* ; but in the interim we muſt prepare ſome other food for the child.

A nurſe who ſuckles, hardly ever has her menſes at that time ; but if they ſhould appear, they will generally be accompanied with gripes : I have evidently found that children ſucking on thoſe days have been indiſpoſed ; therefore it would be much ſafer, if ſome other perſon ſhould ſuck the nurſe's milk on thoſe days, and the child in the mean time, to be fed with clear whey, which is to be prepared of coagulated milk and eggs : ſuch whey I mean, as we get in preparing egg cheeſe ; this as well as all other food for children ought to be well covered over, that no inſects or any ſuch thing can get at it ; therefore it would always be of ſervice, to accuſtom a child early to other food. It may feed on what is already mentioned, while in its infant ſtate, and that principally by way of the above-mentioned ſucking-horn ; afterwards we may give it milk (unboiled), which

should be diluted with barley-water, provided the child has any slight fever. If the child is disposed to obstipations, mix the milk with a little thin oatmeal-gruel filtrated, in which dissolve a little clarified honey; meal pap is never to be given to any child, it is too gluey, tenacious, and slimy a food, and causes obstructions in the mesentery, hardness of the stomach, acidities, wind, and many other indispositions, by which means we lose at least the one half of our children. Mr. Mauriceau's 263d observation, and that of Dr. Zimmerman at Zurich, proves this sufficiently*. When the children are half a year old, we may begin to give them unboiled milk, in which we have mixed a little rye-biscuit, which is tender and well fermented, being previously soaked in warm water. The nurse ought to avoid all commerce of love, because the child will suffer by that: the milk by this means, will be spoiled and grow salt; therefore a married nurse ought at that time to have no connections with her husband. If we discover in her such an inclination, she is then no longer fit to be a nurse: and the same is to be observed, if she is big with child.

Exercise is indispensably necessary to a nurse, if we wish her to thrive well; and that in her body shall be prepared a milk which is not too thick, or which too easily grows acid: for that purpose, it is necessary to order the nurse to take some exercise, or to put her to some work; for instance, to let her grind wheat in a steel mill, or some such other thing, which will bring on a gentle sweat. The time for exercise ought not to be immediately after taking the food, but some time before she is going to eat.

If the child is very uneasy, so that the nurse is prevented from her sufficient and necessary sleep, she will then grow feverish, her breasts dry up, the milk will turn yellow and bad; therefore a dry nurse must be called to her assistance, in order that she may sleep 8 hours out of four-and-twenty. She ought to know

* See also his fine treatise *Von der Erfahrung*, LI. p. 264, where this necessary observation is treated more at large, I, 2, 3, 4.

how to govern her passions; if she suffers herself to be exasperated, she should not suckle the child immediately, as it will grow indisposed, get convulsions, or some other dangerous disease, and often lose its life. Dr. Albinus speaks of a child, a year old, sucking its mother, when she was exasperated, the consequence of which was, that the child immediately got an hæmorrhage through the eyes, ears, nose, mouth, *intestinum rectum*, &c. and died; another is to be seen in the number 3 of Convulsions. It is therefore of great consequence, that every one in the house, but especially the dry nurse, does not give any occasion for the nurse to be exasperated, and that we do not suffer her to suckle the child before her anger is subsided, and that some woman or other has sucked out her breasts, and that the nurse herself has taken in a cup of water the following powder: eight or ten grains of purified nitre, and thirty grains of *morfulæ citri*: I observed that she ought to let her breasts be sucked by some other person, and not to empty them, according to the general method, as that is not only insufficient, but it also injures her breasts.

If the nurse happens to be frightened, and the child sucks her, it will then suffer; in this case her breasts must also be drawn off by some other person, after which she should take 30 drops of *spiritus cornu cervi succinatus*, i. e. spirit of hartshorn with amber, before she suckles the child again, as also every kind of fear ought to be banished before that time.

In case the nurse should be uneasy and hipt, the child will then begin to pine away: we should endeavour to find out the cause of her uneasiness, and if it cannot be removed, we must then procure another nurse. If the nurse falls sick, the child ought not to be suckled, until she is recovered again. In the interim, it may be suckled by some other person, or fed as before-mentioned. If we are obliged, from one of these circumstances, to change a nurse, we find it is of no dangerous consequence, provided the one that is made choice of, has the above-mentioned qualifications, though her milk should be something younger than the former; but yet that difference ought not to be of more than 6 weeks, otherwise the

child would easily get a dangerous flux. The business of a nurse is to suckle the child whenever it is hungry or dry, but not by any means so often as it shrieks and cries, because by this its little stomach becomes overloaded, its food cannot be digested, and by changing in the stomach, grows acid and acrid, then causing vomitings, attended with gripes in the bowels. Nurses and mothers imagine this vomiting a sign of childrens thriving well, but we may compare it to that of a full grown person, who eats and drinks so often and in such quantities, that he is obliged to vomit several times in the day. A nurse would therefore do well, to use the child to suck at certain hours in the day, and even then no more than what is necessary: she may easily perceive when it wants to be suckled,

1. From the time it has gone without suck.
2. If it fixes its eyes on the nurse, and they seem as it were to follow her wherever she goes.
3. If joy sparkles from the child's eyes, when she opens her breasts.
4. By the child sucking her finger on its being put into its mouth.

The nurse ought not to suckle the child immediately after eating, as the milk would then soon grow acid in the child's stomach and occasion gripes; neither ought she to suckle the child before she has breakfasted, as the milk would then be a little acrid. Should her milk decrease, she may drink cows milk diluted with water, in which a few fennel seeds have been boiled; but this will be of no efficacy in case she is big with child. She ought also to suckle the child as often at one breast as the other, if she does not, the child will grow crooked; and for this reason also, she ought not to carry the child always on the same arm. It is likewise necessary, that she learns to swaddle right, and also taking care not to swaddle it too hard, especially across its breast and stomach; nor should she by any means forget, that when the child is swaddled to the right side, it ought next time to be swaddled to the left, to prevent its growing crooked. If the child should cry or shriek whenever it is swaddled, she ought immediately to take it off
again,

again, as it may so happen, that it is pressed by a fold, or pricked by a pin, or on swaddling it may have moved its arm out of order *. The bandage is also to be taken off, as often as the child is wet by pissing, &c. otherwise it will be excoriated; and whenever it is swaddled, the door must be shut, that the cold air may not affect it. The most approved practice therefore, would be never to swaddle children, which physicians have demonstrated by very convincing arguments, as has also Professor Von Schulzenheim, and some others by laudable examples on their children. Was a full grown person obliged to be thus swaddled, would he not think it a great hardship? But we seem to have no compassion on our innocent children.

The nurse ought often to change the child's cap, and never put it on a narrow one, by which its head would be pressed and its growth prevented. The nurse should put a piece of cloth under the cap over its fontanell, in order to keep it warm, or rather the cloth ought to be stitched to it: the same is also to be observed in respect to that fontanell behind the former one, because that also may happen to remain open for some time.

Dirt on the head of a child, with which it is born, ought as often as possible to be washed off with soap; but this must be done gently; because if it was to lay there, it would at last lay the foundation for nasty scabs. That glutinous substance, which is on its skin, ought to be washed off with warm water; otherwise it dries up, and forms scales.

A sleepy nurse should never be suffered to sit with the child by the fire-side: many unhappy circum-

* A child three months of age, on being swaddled began to shriek amazingly; an old experienced gentleman being present, gave the child several red powders of Dr. Michaelis's *specificum anticephalicum* one after another; notwithstanding this its shrieking continued: a young lady of high family being present, observed that the child ought to be unswaddled; which being done, the child was silent immediately: its right arm was already blue by its being carried on its back, between the folds of the swaddles.

stances prove to us the danger with which it is attended. Care should likewise be taken, not to cause any smell by the coals, by which means children have frequently lost their lives; at least they will have head-achs attended with reachings and vomitings: this is to be cured by applying to the forehead linnen rags dipped in warm vinegar of roses. Those complaints the nurse may get by heats, may soon be remedied by going into a little colder room, and applying a sod of grafs to her forehead.

When we are obliged to swaddle a child by candle-light, we should place a candle opposite its feet, because the child always looks towards that place where the candle stands, and consequently without this precaution, would squint, was the candle to be placed on either side of it: if the child while in its tender years, has acquired this bad habit of squinting with one eye, then we may hope for a cure, by covering its other eye for some months, as that obliges the child to look strait forward with that eye it has accustomed to squint with. When children do not suck well, our old women say, that they are tongue-tied, and pretend that the bridle ought to be snipped with a pair of scissars. I have never as yet seen any child's tongue tied. The reason of their not sucking well, is generally that the child has gripes, or that the milk has acquired some bad taste: but oftener it arises from some defects in the nurse or mother's nipples, as before-mentioned, so that the child cannot keep them fast in its mouth, or suck the milk out. The child then generally smacks in sucking them; this defect in the nipples cannot be remedied, therefore another nurse must be procured. If the child, when it shrieks, does not carry its tongue up to the palate, or to the outside of the lips, and the point of the tongue is not round but cloven as it were, we then know that its tongue is tied, but in other cases we may conclude it is not; should an operation be judged necessary for it, it ought never to be done with the nails, but performed by some experienced man; otherwise one of the blood-vessels near the tongue might easily be opened, and the blood flow from it, which is not always to be perceived, because

cause the child swallows it. Such unhappy accidents may be seen in Mr. Mauriceau's 301 Observation, and in Mr. Dionis's Treatise of Operations, p. 626. When the tongue's bridle has been improperly snipped, it has happened, that children have been suffocated by turning the tongue round, and carrying it down into the throat. Such accidents are mentioned by Mr. Petit, in the Transactions of the Academy of Sciences in France, for the Year 1742.

A child in its infant state, hears but little, therefore we ought not to speak slow in its room, but rather use it by degrees to noise. A nurse ought also with her finger to strike backwards and forwards in the child's mouth, principally over the gums; this will afterwards be of great service to the teething.

She never ought to keep a young child upright, unless its head is supported by something else; it ought also to lay with its head a little higher than the other part of the body, otherwise it will be subject to apoplexies: neither ought it to lay a long time on the same side, but be turned as soon as it appears uneasy in its sleep or awake. It would likewise be of great service to omit that bad custom of rocking children, as by that means they grow vertiginous and drunk as it were; the milk likewise coagulates thereby in the child's stomach; consequently the sleep brought on by rocking will do no good. Take away the cause of this uneasiness, and it will sleep soundly. Our peasants use hanging cradles, whose motion is less violent. Mr. Van Swieten (Comment. p. 681), gives an instance of a boy 8 years of age, being put into a cradle by his play-fellows, kept there and rocked violently till he got a violent vertigo, and vomited gall in colour resembling verdigrease. The cradle or the bed of the children ought not to stand near any stove, fire-place, or near a wall, where a chimney passes by from any room below, in which a fire is kept: for thereby it would be used to such a warmth, that it would get catarrhs at the nose, on being afterwards carried to the window, or some other part of the room; the cradle ought also to be put in such a direction, that a strong light may not fall upon the child's eyes. A
full

full grown person will find it offensive to his eyes by working on a table opposite to the window. It is not only necessary for the room to be kept clean, in order to prevent the child's getting the scab, but the nurse ought also to keep herself neat and clean : likewise the child's linnen, rags, flannels, &c. should frequently be shifted.

In general we indulge a child by sucking till it has gotten all its 16 milk teeth : in this however, we cannot fix any certain time, as a weak child should suck longer than a robust one. Nevertheless it ought to leave off by degrees, and as a beginning towards that, should only be suckled in the night time. At last when the nurse will wean it entirely, she may smear some essence of worm-wood on her nipples, which will soon give the child a disgust for sucking.

When the child has left off sucking, it will grow costive in the beginning, nevertheless it will eat much, get indigestions and gripes ; therefore we ought to give it sometimes a little manna to suck, and sometimes also of what is commonly called *anima rhei*, which besides the advantage of removing costiveness, also corrects acidity, and strengthens the stomach and bowels.

Tender children are generally wet behind their ears, though they thrive well in every other respect. It is dangerous to use any repellent physic against this discharge of humours, for fear it should then attack the eyes. Such a discharge behind the ears of a nobleman's son, being dried up with an ointment of cerusse or white lead, occasioned its eye-lids to grow sore, and its eyes to redden in such a manner, that I feared the child's losing its sight : but it was cured by a small vesicatory applied behind its ears, and by the red ointment of St. Ives, smeared with a pencil on the margin of the eye-brows.

If we could prevent the shrieking of children, it would be of great advantage, because much shrieking may have many dangerous consequences : for example, the blood is retained in the brain, for it can easily enter the *arteria pulmonalis*, but cannot well get out again ; besides the child grows dry in the throat, feverish, and gets easily a rupture. The whole art of
silencing

silencing a child consists, 1. In removing the cause of its shrieking; or 2. In amusing it with something which strikes its fancy, and wholly engages its attention, and makes it forget what it cried for.

Shrieking we may judge to be caused by a disease, if the child's scrotum is relaxed, or its excrements green, or the linnen coloured by the urine after being dried, or if it is externally affected with excoriations, boils, or such other things, of which the nurse ought immediately to give the parents notice, in order that they may procure it some relief.

If the child is hungry or dry, it ought to be suckled.

Should it have sucked too much, it will not be relieved unless by vomiting. If it has lain too long on one side, and is affected by that, it should be turned on the other. Care should likewise be taken, that it be not too warm in the cradle.

If the child is swaddled too close, or in sleeping has carried some member into disorder, or has fouled itself, it will be quieted by being unswaddled, shifted, and dried before the fire, and its feet likewise warmed. Hard swaddling presses the blood up towards the head, therefore a child which is pretty fat, always looks the handsomest when it is unswaddled.

It also shrieks, on hearing any person close to the cradle, whose voice it is not accustomed to hear; this is soon remedied by the persons being silent. If the customary time of its dressing or sleeping is omitted, that omission ought the next time to be corrected, as only the simple neglect of what it has been accustomed to, then makes it shriek.

We enquire if the nurse has her menses, as we know if the child sucks on those days, it will of course be uneasy. The true reason of this is, that the woman is then more easily moved, or sooner liable to be affected by something, than at another time.

If we can neither find out, or easily remove the true cause, then we must make use of the second method, that has already been spoke of; and which is, to shew the child any thing that it is unacquainted with, and either by means of its colour, or glitter-

ing

ing brightness, pleases it; or we may carry it to the window, or to a looking glass, shake a rattle, tinkle a small bell, bite on some sonorous thing, or sing to it. We may hush it, but never immediately after its having been suckled. We may also carry it to another room, or give it to any one it is very fond of. If it is a girl for instance, we shew it puppets; and if a boy, horses, &c. carefully remembering against the next time, what had the greatest effect towards pleasing and making it quiet: but above all, care must be taken, that the nurse in secret does not give it *philonium theriaca*, or such soporifics; because children which often get these things grow stupid, crazy, convulsive, and die. From all this, it plainly appears how much the child may suffer by its nurse. How nice we ought to be in the choice of her, and likewise how necessary it is for parents to keep a watchful eye on the nurse's conduct. On her constitution depends the child's health, or diseases, or whether it shall be lame or not. Now in matters of such great importance, unless we will merely depend on chance, we should use the means which the Almighty has given us to provide for our children's welfare. For a more circumstantial account of this, see Professor Schulzenheim's Oration on the Nursing of Children, spoken before the Royal Academy of Sciences, in the year 1760.

C H A P. II.

C O S T I V E N E S S.

DURING the first 24 hours after the child is born, we ought not to allow it to suck, unless from a piece of muslin, in which is contained a little manna, sugar, or an electuary prepared of the same. By this means, it will have three or four stools a day, for the first three days, which will be very conducive towards entirely discharging the *meconium*. Afterwards a couple of stools a day will suffice: when the child sucks, these stools ought to be larger in proportion.

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When a child remains 24 hours without a stool, we then judge it to be costive, and ought immediately to relieve it: the safest method of doing this, is with the above-mentioned electuary, which should be prepared according the *Pharmacopœia Wirtembergica*: we may send for an ounce of it at a time, and give a tea-spoonful of it to the child every three hours, leaving it off, as we judge it will operate, which may be known by hearing any noise it will occasion in its body. To a child at the age of 6 months, we may give two tea-spoonfuls at a time, and should it after this continue costive, we must then assist nature by a suppository, which may be made either of tallow dipped in oil, or a raisin freed from its stones, and afterwards dipped in oil. Children that are hard swaddled across their bodies, will not have a stool until they are unswaddled.

Thin flesh broth goes almost wholly into the blood, but as this is not the case with the milk, it will therefore give more excrements; besides children are weak, and their digestive organs less strong. The guts are also proportionably longer than those in a full grown person: for this reason then, more will remain in the bowels of what children eat, and consequently make their evacuations larger in proportion than in full grown people.

If the nurse's milk is old, the child will be troubled with gripes, and be costive. We may sometimes remedy this, by the nurse eating a pickled sprat in the morning, so that she may drink the more, and consequently her milk will be diluted. If this does not succeed, we are obliged then to change the nurse for another, that has younger milk, but not under six weeks.

If the child has left off sucking, and its disposition to be costive still remain, we ought to rub daily with a warm hand upon its stomach and lower part of the belly, give it a little milk, in which we may mix a little oatmeal-gruel and honey, and let it use a little exercise immediately after it, to assist nature towards procuring a stool. This being done for several days together in the morning, and always at the same hour, nature will at last become habituated

to this necessary evacuation. We only make the case worse, by having constant recourse to physic, as by that the bowels become insensible.

Oil, butter, and every thing fat, injures the stomach, diminishes the peristaltic motions of the bowels, and consequently prevents them from making the necessary evacuations. The same is to be understood of the yolks of eggs, as they contain much oil; we may expect the same from a nurse's milk, if she is fat. *Haller's Element. Physiol.* vi. p. 200. vii. p. 90. & 103. and Dr. Tissot in his *Avis au Peuple*. Perhaps this is the reason of their requiring such strong doses of purging medicines in Switzerland, as they are much used to fat milk there? See Dr. *Tissot*, l. 6. p. 573.

C H A P. III.

Procidencia, vel Prolapsus Ani.

WHEN children get a diarrhœa, or looseness, it frequently happens, that the *intestinum rectum* falls out, which if not immediately cured, will become habitual. I never found any better remedy for this, than fomenting the part fallen down with a fine sponge, dipped in warm wine. *Fuligo*, or soot from wood, powdered small and sifted, will also cure it by strewing it on the *rectum*, and by carefully introducing it into the body again. It will also be of service to fumigate the protruded part with mastix.

Should this disease prove obstinate, the best expedient would be always to accustom the child to a high easy chair, whenever it goes to stool, so as to prevent its foot reaching the floor, as the *rectum* will not fall out then. The child's parents need be under no apprehension about this, because, in proportion as the child's years and strength increase, this weakness generally disappears of itself.

C H A P. IV.

E X C O R I A T I O N.

EXCORIATIONS may soon be relieved by applying to the excoriated parts the powder of *Farina Lycopodii*.

Should it spread far, we may anoint the excoriated parts with the following unguent.

Rx. *Unguent. Pomad. Cerati.* ℥iij.

Flores Zinci.

Farina Lycopodii, ana ʒj. *M. optime.* Dr.

C H A P. V.

P N E U M A T O C E L E.

THIS, which in children is called a windy rupture, is very easily remedied by applying to it a piece of flannel or cotton fumigated with mastich, or fomenting the part with cloths dipped in warm white claret and lime water; or by applying to it *emplastrum diaphulphuris Rulandi*. The generality of people neglect procuring any remedy for this disorder, under this pretext, that if they are affected by it in their youth, they will be unfit for strong labour all their lives after. From this I suppose arises the old saying, that every eighth man has a rupture. Children shrieking much, will have ruptures, as their *omentum* is in a relaxed state. Dr. Haller in his *Elementa Physiol.* vi. p. 378, and also Mr. Arnold in his *Memoires de Chirurgie*, enumerates those places where a rupture may happen. The surest relief is to be had from bandages well made, and with steel springs.

C H A P. VI.

CATARRH OF THE NOSE.

A Catarrh of the nose prevents children from sleeping, and makes sucking very difficult to them : those that are exposed most to any draught of air, or too much heated, by their bed places standing too near the fire, will be most liable to this disorder ; they will find some relief by anointing their noses with an ointment of marjoram, &c. or by blowing some fine powdered sugar up the nostrils. I never found any thing of such efficacy as the oil of eggs, frequently smeared on the nose*.

C H A P. VII.

G R I P E S.

WE imagine children to be griped, when they are uneasy, often shriek all on a sudden, and violently contract themselves, kick much, sleep little, and then smile ; the excrements are green, or soon will be so, and its cloths appear greenish when they are dried. The excrements have a sour stench, and wind coming from the child, smells likewise sour ; if they should remain long, the excrements will have a pale yellow colour, and appear very thin, with little

* If the stoppage of the nose is increased to such a degree, as to prevent the child from sucking, we must apply to its nostrils, a piece of warm linen dipped in a mixture made of

Aquæ Marjoram ℥ ℥.

Vitrioli Alb.

Elaterii Alb. ana gr. ij. M. Dr.

lumps.

lumps. If the child makes more water than usual, or as the saying is, if it bepiffes itself up to its elbows, it will soon be affected with gripes, as probably this is a sign of being costive.

We ought to cure gripes as soon as possible, otherwise they will occasion convulsions. It is very remarkable that a child affected with the gripes, refusing to suck, will by being held upright before the nurse, suck without the least difficulty until it is satisfied*. A child that has the gripes, either is or not costive; in the first of these cases we may relieve it by some of the abovementioned electuary of manna, and should that be too slow in its operation; we may give a clyster, prepared with six spoonfuls of milk, four of oil, and a little sugar mixed well together; in the other case, should the child be sufficiently loose, we can immediately palliate its pains by applying on its stomach a cake moderately warm, prepared of oil of olives, yolks of eggs and flour, which may be baked in a frying-pan; or we may melt some of the *Balsamus Scherzer* in a spoon, spread it on a piece of leather, and apply it to the child's stomach; but this only gives relief for a few hours. Absorbent powders procure some relief to young children, but it is very difficult to know when we have given enough of them. *Magnesia alba*, prepared according to the *Pharmacopœia Edinburgensis*, is the best remedy, as it corrects the acidity and occasions stools. It may be either taken in almond-milk, fennel-water, or the child's common drink. We ought to give the mother or nurse a peculiar powder, which is to be prepared of

R. *Magnesia Albæ* ℥j.
Cort. Aur. Hispal. Cond. et exsicc.
Sem. Fœnicul: dulc:
Sacch. Albi, ana ℥ij. *Misce f. Pulvis.*

* The reason of this perhaps is, that the acidity then runs down from the *cardia*, which has many nerves, and is consequently the more irritable,

As this is not disagreeable nor in the least affecting, a nurse may take this during the whole time a child is affected with the gripes: I myself knew a nurse who was obliged to take this for eight months together, morning and night, and if ever she omitted it for two days only, the child fell sick of the gripes; it is now four years ago, both are still alive, and in perfect health.

To the child itself we may give frequently a little hartshorn jelly, prepared without acid; and every hour or half hour when awake a tea spoonful of the following milk for children.

℞. *Aq. Fol. Tiliæ* ℥ij.
Cerasor. Nigr.
Ol. Amygd. dulc. rec. & frig. ana ℥i.
Salis Tartari ℔j.
Ovi. rec. vitell. ℥iij.
Mucil. Gum. Arab. ℥j. *M. D. S. Milk for children.*

We could easily correct acidities in children, and also promote their digestion, could we by any means prevail upon them to take small pills of half a grain each, prepared of some gall, for instance, that of eels, to which should be added a little saffron; soap would likewise be of greater efficacy, but it is too apt to grow rancid. *Conf. V. Swieten's Comm.* iv. p. 684. and *Dr. Haller's Element. Physiolog.* vi. p. 608. on the virtues of gall in general.

The nurse's diet in these cases ought to be flesh, and thin flesh broths, in which we may dissolve a few yolks of eggs, well beaten. All acid food must be avoided. We should also procure a dry nurse to assist her, so as to relieve her from too much exercise, as by this her milk will be spoiled. Exercise is notwithstanding at all times necessary, so as to occasion a gentle perspiration, and more particularly at this time. I have already observed in the chapter on nurses, an instance of a nurses milk being spoiled in a fortnight's time, meerly for want of exercise, and restored in as short a time by using it moderately. Should this precaution prove insufficient, we then must procure ano-

ther nurse, whose milk is younger than the former, and perfectly void of acrimony.

Gripes are a very common disorder among children of the poorer people, especially in the summer season, as their mothers then live chiefly on sour milk, which occasions gripes in the children, followed by convulsions and apoplexy, by which numbers of them lose their lives. Happily their mothers are at that time, for the most part, employed in either corn fields, meadows, &c. which labour corrects in a great measure the acidity; was not this the case, few of their children would escape death: their mothers to remedy this should give them as much oyster-shell powdered as will lay on the point of a knife, two or three times a day, in a little water, and repeat it, till the green colour and sour smell of the excrements are quite corrected: she should also have by her always at hand, a gallon bottle of spring water, in which should be dissolved an ounce of salt of tartar, in order that she may take a spoonful of it two or three times a day, as soon as she finds the child affected with the gripes; otherwise if she waits, as is generally done, until convulsions come on, the event will be dangerous and uncertain.

C H A P. VIII.

D E N T I T I O N.

AS soon as a child arrives at the age of four months, and becomes then indisposed, we generally suspect its indisposition is occasioned by its teeth, though this oftentimes has quite a different appearance, which not being taken notice of, increases, and gets the better of the child: we ought therefore not to cure it inconsiderately, but make a diligent enquiry into the real cause of the disease, whether it is or is not occasioned by dentition. We may easily know this by the following signs*.

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1. By

* The first sign Dr. *Van Swieten* observed, was the upper margin of the jaw increasing in breadth; by the

1. By the child's frequently putting its finger, or any thing it lays hold of, into the mouth, or by biting hard upon the nipples of the breast; the reason of its doing this, is, to allay the itching which the pressure of the growing teeth occasions in the gums.

2. If the child spits much, or swallows its spittle. In the latter case, it will for the most part have reachings or a diarrhoea, which is of great relief in the cutting of teeth.

3. If the gums are tender, swelled, or already inflamed; the first of these we may know by the nurse's feeling in the child's mouth, and the latter may be seen by looking at them. The child will also feel some kind of pain or smart by sucking.

4. If the tonsils, eyes, or cheeks, swell and become red.

Should all these signs be observed, the child is beyond a doubt affected by its teeth, and every thing will happen in the above-mentioned order. When the teeth are emitted one by one, the child's pain will be trifling, but if several pierce the gums at the same time, dentition will be accompanied with fever, anxiety, startings, convulsions in the muscles of the face and whole body, and sometimes much worse, ending either in a lethargy or death itself. Dentition is both early and easy, when the child is born the full time

two *laminae* (of which the jaw consists) being distended a little asunder, so that the tooth might find room to make its exit. See his Comment. iv. p. 745. I have seen children with those signs observed at No. 1. and No. 2. before the teeth came out, and after having recovered from being very sick for six or seven days before; but three weeks after that I observed a small hole in the gums, thro' which the tooth was protruded one or two days after without any kind of pain. This seems to confirm what Dr. Harris observes in his *Treatise on the Diseases of Children*, which is, that dentition has two periods; the one when the *laminae* of the jaw begin to divide, consequently extend more the membrane and gums covering their sockets; the other when the tooth is piercing through this membrane and the gums.

after

after conception, and of healthy parents; and its mother during her pregnancy has not been subject to violent passions, but on the contrary been of a good and cheerful disposition, has eaten good food, and given the child wholesome milk. The more we neglect the abovementioned rules, the more difficult dentition will be, and the child consequently sooner lose its life. Those which we call eye-teeth (*Dentes Canini*) and those opposite them, in the under jaw, are the most troublesome of all; and more especially if they, as generally happens, shoot out later than the foremost grinders; as they then must be squeezed between them and the fore-teeth, which are very often situated very close to one another.

A tooth before it can shoot out must first pierce the gums; * in case the teeth should not be hard enough, they cannot work their way through, or if the gums are too thick, more time will be required for piercing them, as a greater number of fibres are then to be torn asunder, this occasions irritation and pain, both of which cause a heat in the mouth, a greater flow of humours to the part affected, swellings, inflammations, and restlessness; from this we learn that dentition becomes easy if we by any means make the gums thin and insensible, and procure hardness to the teeth. The last of these we gain by giving the child wholesome mother's or nurse's milk; and the former may be done by the nurse's rubbing her finger gently on its gums in the manner above mentioned. By this means the gums will become so thin, by the time the child is at the age of three months, that the teeth will shoot out almost without occasioning the least sensation. I do not write this merely as a theoretical reasoning, but from re-

* Mr. Bertin is of opinion, that the pain is caused by the true root of the tooth pressing the nerve, giving ramifications to the tooth. That little bony *lamella* (*diaphragma osseum*) which is between the milk-tooth, and that below it, seems to prevent the former from pressing the latter. See *Eustach. de Dentib.* and *Albini Annot. Acad.* l. 2

peated experience. It will equally be of service, to let the child bite upon a wolf's tooth, or any other hard thing; the only inconvenience this may be attended with, is, that the child by playing with it, may easily hurt itself in the face, and especially in the eyes; if by neglecting part or the whole of these precautions, dentition already be very difficult, with the above-mentioned bad symptoms, we must, 1. relax the gums, and 2. prevent as much as possible the sensation of pain occasioned by the pressure of the tooth. As to the first, the gums may be softened and relaxed by frequently touching the tumid and pained part with warm honey, syrup of violets, althæa root, or some good oil of olives, or of almonds cold drawn; fresh marrow or butter, fresh brains of a hare, or a calf, or any other animal; the more relaxing and aperient to the gums, the better they are.

As soon as the child, from frequent use, will suffer us to finger its mouth, we may apply to the inflamed part a roasted fig, or a fine sponge dipped in a warm decoction of carrots, or in milk boiled with figs, althæa root, and a little saffron; this is exceedingly palliating, but ought to be frequently changed. Some people are used to boil a whole althæa root in honey, and give it to their children to bite on; but if their gums be so inflamed that they will not bite any thing, and it has increased so far as to threaten a gangrene, we must repeatedly touch the dark red places with honey of roses, (*mel rosarum*) in which is mixed a few drops of *spiritus sal. marini*. See *Van Swieten's Comment.* iv. p. 748.

We may diminish that painful sensation, by giving to the child *syrupus à Meconio Ph. Lond.* as much as is sufficient to procure it a little rest. But this remedy ought at first to be given by degrees, so that we may find out how large a dose is requisite towards quieting the child, whenever it again becomes uneasy by the pains. As one child requires more or less than another, we cannot therefore fix upon any certain dose; we may be sure to avoid all mistakes by giving only half a scruple every half hour, omitting it as soon as it procures relief. If for instance a dram has been used, and the child five or six
hours

hours after begins to shriek and be uneasy, we then know such another dose will procure it rest for the same length of time. Yet in the mean time we must not omit the application of the above-mentioned emollients, and give the nurse nothing but cooling food and drink. But herein one thing is to be observed, that we give the child a sufficient quantity of *Electarium de Manna* to prevent its being costive, or now and then to give a clyster for the same purpose, as costiveness is the only inconvenience arising from taking this syrup, and as experience teaches us, that a slight diarrhœa is beneficial towards relieving the pains.

Should the disease, contrary to our expectation, baffle all our remedies (though I never as yet saw them fail) the child continually shrieking, is feverish, has startings, and convulsive motions in the muscles of the face, and such other signs of approaching convulsions, our only recourse is bleeding, or to apply leeches behind the ears; and if this is insufficient we may give a larger dose of *Syrupus à Meconio*, or add to it one or two drops of liquid laudanum (well knowing whether the disease is still in the beginning) by which means convulsive pains may commonly be prevented; but should this likewise prove insufficient, and the gums redden and swell, they ought immediately to be cut down to the teeth. There is no kind of danger in this operation, provided none of the fibres of the flesh are left across the summit of the teeth; in which case the pain would become still more violent, until it is cut off, which gives instant relief. The incision in the gums ought to be frequently fomented with a sponge dipped in warm wine, in which some sugarcandy has been dissolved.

As a fibre is often left on cutting the gums, the same may also happen by the teeth themselves working their way, though we suppose the tooth to be emitted, although the child is sick as before, but upon a more minute examination, a fibre will be found to stop the progress of the tooth; this being cut off, the pains are relieved immediately, and without doing this, the child might have lost its life.

As

As beneficial as a gentle diarrhœa is on these occasions, it would be equally hurtful was it too violent, by making it restless and weakening it; should a strong evacuation come on, the child would be quite exhausted, and probably by this means get convulsions and die. In the chapter on diarrhœas we may see what degree of looseness is too violent, and the applicable remedies proposed.

From the above observations it may easily be understood,

1. What children breed their teeth early and with ease.

2. Which on the contrary breed their teeth late and with pain.

3. How a child may suffer great pain, and also die, by dentition, because its father had contracted some distemper, or its mother during her pregnancy has had much sorrow, violent passions, used bad diet, or because the nurse's milk has been spoiled.

4. How necessary it is to accustom children early to have their gums rubbed.

5. Of what importance it is to know and distinguish the diseases of children, and that such a science is not within the reach of a midwife's or nurse's capacity.

6. That emollients only are serviceable when the gums are tender and inflamed.

7. That the brains of a hare, or the blood from the comb of a black cock, has no preference to other softening remedies; as also that a wolf's tooth is not preferable to either polished chrystal, or any other hard substance.

8. On what occasion the gums ought to be cut down; because in the first period, it would be quite absurd to advise this operation; but in the latter it may be useful when nothing else will relieve.

9. That reachings and gentle diarrhœas at this time ought not to be stopped.

10. That as soon as the child has got its first twenty teeth, we ought no longer to suspect dentition as the cause of any illness; as the others do not make their appearance before they arrive at the age of seven years.

C H A P. IX.

Of the Aphtæ or Thrush.

WHEN a child gets pimples or bladders in its mouth, which soon grow ulcerated, or with crusts on them, it has the disease we call the thrush. This is attended with many bad symptoms, and often endangers the child's life; for besides that children shriek day and night on account of the pain, they are unable to suck, and consequently suffer by both hunger and thirst; if at this time they suck, the nurse's nipples commonly will be excoriated and sore: if the thrush extends to the throat, they have a difficulty of swallowing; if it descends to the stomach, they will have many reachings and hiccough; and if it extends still farther down in the bowels, the chyle will be prevented from entering the lacteal vessels, and the blood is carried off by a diarrhœa: if this continues long the child must die for want of nourishment.

The thrush is commonly of a white, transparent, or yellowish colour; the blacker it is, the greater is the danger, as all the black spots are mortifications. The deeper and nearer the pimples are to each other, the worse the disease is. When the bladders or ulcers disappear, and soon after return again in greater number, we judge it likewise very dangerous.

The thrush also differs with respect to the part affected.

1. That which appears first upon the lips, gums, tongue, inside of the cheeks, palate, uvula and tonsils, is the easiest of cure.

2. It is very difficult when it descends to the fauces, stomach, and intestines.

3. It is still more dangerous if it has reached the aspera arteria and the lungs.

4. But the most dangerous of all is that which beginning in the stomach and bowels, ascends to the throat, and appears in the fauces as a membrane of lard.

When

When the eschars or crusts at last fall off, it occasions to the children much spitting, mixed with blood; but when those on the intestines fall off, it produces great sensibility, and often looseness or dysentery, the excrements being tinged with blood. These four kinds are easily distinguishable from each other. The first can be seen; the second may partly be seen, and partly judged of, as the child then has a hiccough, and vomits, especially when it sucks, or it has a diarrhœa, the milk then being mixed with the excrements. When the child has the third kind, it is hoarse, coughs a good deal, the sound being as it were through a metal tube. We judge of the fourth kind, if the child has been affected for several days with a strong fever, accompanied with great evacuation, is very restless and uneasy, has a hiccough, and the tongue of a fiery red, with an inability of retaining what it sucks.

Those children are most subject to aphtæ, who suck old milk, or too thick, or too acrid; or by having their mouths unclean: those also who fall to sleep on sucking, as generally then some milk being left in the mouth, which grows acid and acrid: as also those who having been affected with fevers, accompanied with looseness. But the thrush generally appears in the time of dentition. The thrush in the mouth is the most common kind, and may generally be prevented by the nurse taking care to keep the child's mouth clean, which should be examined every day. The best thing to effect this is, with a few sage leaves well washed, and boiled in water alone, or mixed with a little white claret and clarified honey, and afterwards filtrated. A piece of linnen may be dipped into this and wrapped round the finger, so that the child's mouth may be dabbed all over gently, especially where any white spot is to be seen.

But when this has been omitted, and the child has already got the thrush, we must then give the nurse, 1. Some of the above-mentioned powder for nurses four or five times a-day, and order her to drink more than customary: 2. Prepare a juice of *rob. diamor. dianuc.* and honey of roses, half a dram each,
to

to which add as many drops of *spiritus vitrioli*, as are sufficient to give it a slightly sourish taste. With this juice we dabb those places five or six times a-day where the thrush appears, and a little after each time of touching them, before the child is permitted to suck, its mouth ought to be washed with a decoction of sage, as before-mentioned ; or with a solution of a few grains of white vitriol in warm water used in the same manner. I am fully convinced the thrush may be cured in a few days time, if the above prescriptions are rightly followed. If the gripes accompany this disorder, they may be relieved by the remedies recommended for them : but above all, *magnesia alba*, either with or without a little rhubarb ; because if any acidity or slime is in the stomach and intestines, it ought to be immediately corrected and carried off.

When we find the thrush becomes very painful by the violent shrieking of the child, we give the nurse a little syrup of white poppies (*syr. à mecon. Ph. Lond.*) once or twice a-day. When she suckles the child, after her having taken this, it will find immediate relief, provided her breasts were empty when she took it. The dose is then only two drachms ; but if her breasts are full when she is going to take this remedy, we may give her three or four drachms at once : or should we rather chuse to administer any remedy to the child itself, we may safely give it once or twice a day, one or two drops, according to its age, of Dr. Jones's *panacea*. Dr. Riverius gave a whole grain of *laudanum* with success to his own child. The worthy Mr. Boyle's remedy for the thrush, is from experience found efficacious. The composition of it is as follows : Take two ounces of the juice expressed from *sempervivum majus*, mixed with an equal quantity of honey ; after boiling it, add to it as much alum as will give it a slightly austere taste. Touch the aphtæ every hour with this. Some make use of the excrements of hens dissolved in white claret, (*vin. alb. Gallic.*) and filtered, and this is also a very good remedy, if used as the former one. When the eschars have fallen off, and excoriations left in the mouth, they should be touched with the mucilage of quince

quince feeds alone, or mixed with an equal portion of *syrupus sempervivi majoris*.

The thrush being internal, descending to the stomach and intestines, we give the child as often as possible a tea-spoonful of a juice expressed from turneps baked, and mixed with an equal portion of *mel rosarum*; or mix a decoction of carrots with a little *mel rosarum*, and use it as the former. We may prepare another remedy from half an ounce of flax-seeds beat, and boiled with a pint of water, to nearly the consistence of a syrup; strain it, and add thereto two ounces of *mel rosarum*, and give it in the same manner as the others. The nurse ought all this time to use the before-mentioned powder, and drink as before observed, that her milk may be diluted. When the scabs or crusts begin to fall off, it is then necessary to give the child a gentle laxative, which strengthens the intestines. Syrup of rhubarb is the best remedy for this purpose, given either alone or mixed with a few grains of pure rhubarb in powder. The safest way of giving it, is by small quantities every three hours, until it operates. This precaution is very necessary, because, as we have before observed, when the crusts fall off, the bowels are very sensible, so that a small dose operates more at that than any other time. Should the child now have the least sign of a dysentery, we must give it to drink freely of *emulsio Arabica*, (emulsion of gum Arabic) or a soup boiled of millet, water, and milk.

See the 10th species of *Diarrhoea*.

C H A P. X.

On Convulsions, and Epilepsia Infantilis.

THE nerves of children are very sensible and irritable; they are more numerous in proportion to their bodies, than those of a grown person, and as they have many juices or fluids, their nerves are so much the more softened. They are also covered with very thin membranes, which makes their sensation so much the greater. For this reason children are subject to startings, and these, at what time of life so ever they happen, are called convulsions. But when the whole body is thus affected, and the face at the same time appears bluish, it is then called an epilepsy. This disease is very nearly a-kin to the true or genuine epilepsy, and therefore has acquired the name of *epilepsia infantilis* by physicians, but Hippocrates called it *eclampsia*.

This disease appears to be very dangerous. It is by no means so easily cured as prevented; therefore it is of importance to be attentive when a child is going to be affected with it. We have great reason to apprehend its coming, if the child smiles in its sleep, and more especially if it does so when awake. These signs however are of little consequence, if unattended with others. Our apprehensions of an imminent epilepsy are much better founded, if the child has some obstipations, or fever, or gripes, or a difficulty of making water and of teething, or if its nurse has been frightened, or has used external remedies against the scab, or when we know that it has worms. When the child afterwards begins to distort its eyes, and turn them towards its nose or upwards, and grows bluish in the face, the disease is then on the point of appearing. The body either will be convulsed at once, or all its limbs successively, the jaws are locked, and its mouth full of slime. This remains for a longer or shorter time, till the child falls into a profound sleep; it awakes at length, and seems to be tolerably well.

If the cause is not removed in this interval, the fit will generally return the next and third day, and at the same hour. The disease then affords a truce for some time, but may return as soon as the same or any other cause affects and irritates the nerves. At all times a child may not get off so easily, but even lose its life. The paroxysm or fit of an epilepsy consists of two periods, the first containing the convulsions, and the second their consequences, which are a rattling noise in the breast, and a profound sleep. It is under the former of these that they die; and as they lie in a state of an apoplectic fit, they are said to die of an apoplexy, which in some measure is true. We find in the news-papers many accounts of children, said to have died of apoplexies, tho' their true cause has been the epilepsy.

Many things may cause this disease; therefore in the cure of it, we ought to know what is the present cause. In general it is not the epilepsy alone which we have to cure, but in some certain children it is produced by a particular cause. I shall therefore enumerate all the causes, the method of discovering them, and the remedies against each kind.

1. *Meconium* will cause an epilepsy, if not sufficiently carried off, by growing acrid in the body, and by irritating the intestines: for this reason then it is very necessary that a new-born child has, for the first days, three or four stools a day. From what has been said, we may easily know when the disease arises from this cause, and it may be removed without difficulty by a clyster prepared of six spoonfuls of tepid milk, four of oil, and a little sugar beat, and may easier be prevented by the electuary of *manna*, as already mentioned p. 14.

It also happens, that older children are sometimes very much obstipated: their excrements then grow hard, or acquire some acrimony, either of which by pressure or irritation will cause an epilepsy. We then enquire of those who have the care of the child, whether it has been costive at all; we feel on its belly to find whether it is swelled, or if there is any hardness, and in that case a clyster, as already mentioned, must be immediately injected: or we may
give

give it the electuary of *manna*, or a little syrup of rhubarb, with an equal quantity of cold expressed oil of almonds, or instead of that good olive-oil and a little sugar: of this we may give a tea-spoonful or two, every three hours until we judge it will operate, by hearing a noise it causes in the lower part of the *abdomen*. The rhubarb strengthens the bowels, and enables them to press out the excrements; these are loosened by the sugar and the syrup, and smoothed and made slippery by the oil. It is upon this account physicians pretend to relieve children subject to obstipations, by giving them morning and evening a little oil of olives for some time. I believe it is very serviceable to procure an instantaneous relief; but cannot help thinking that if used for any time, it must injure the stomach, lessen the peristaltic motion of the intestines, and consequently lay a foundation for costiveness.

2. Gripes are the most common cause of the epilepsy in children: by sucking too much they will be affected with gripes*, or by sucking of a corrupted milk, or from their stomach and intestines being too weak. I have myself clearly found, that a weak child may get the gripes without the least fault of the nurse, as the following instance plainly shews. Two children being suckled by the same nurse, each had no more or less than what was sufficient. The oldest thrived always very well, but the weaker had continually gripes, with green excrements, and with a general indisposition. Though it afterwards got its own nurse, both this nurse and the child were obliged to

* A child will suck too much, if the nurse has that idle custom of always quieting it, by giving it the breast: its stomach thus overloaded, the milk grows acid, and coagulates: it also gets the gripes, if rocked soon after being suckled, as the milk then curdles in the stomach as when shaken in a bottle: for this reason a child ought never to be put into a cradle soon after being suckled; but should be put upon the nurse's knee, its belly and back gently rubbed all over, till it discharges some wind. The sleep it takes then, will always be sound.

34 DISEASES OF CHILDREN,

use proper remedies. It was kept alive, but did not enjoy any settled health, until by degrees it had gained considerable strength.

The signs of a child's having the gripes, may be seen in the chapter on that subject.

In an epilepsy arising from this cause, we ought to inject a clyster during the fit; for as the child is at this time unable to swallow any thing, it is useless to pour any thing into its mouth. As soon as the fit is over, we give the nurse some of the before-mentioned powder for nurses, see p. 19. to take several days together, as much as will lay on a knife point: this is to be taken four or five times a day, and the child must be treated as above prescribed in the Chapter on Gripes.

They must both continue the use of the same remedies until the child's excrements have acquired their natural colour; in the mean time, to prevent any returns of the same disease, we must take care, that the nurse observes a regular diet, and such a one as has already been mentioned in the Chapter on Nurses.

Dr. Joh. G. Zimmerman in the *Acta Societatis Zyrich.* Vol. II. p. 396, gives us an instance of a child, who during the first months of its life, had frequent attacks of violent convulsions or epilepsies, which went off entirely, as soon as ever the child was taken away from its feeding on meal-pap.

3. *Passions of the nurse*, are another cause of this disease; for the child sucking her soon after she has been by any means frightened, it will commonly be affected with convulsions; but among all the passions of the nurse, none has such violent effects, and dreadful consequences, as when she is exasperated. This she knows commonly how to disguise, better than any other emotion of the mind; but yet we have reason to suspect something of this kind, if her eyes are fiery, the colour of her face changing now and then from a pale to a red. Our apprehensions are yet better confirmed, if the child, being a little before healthy, becomes of a sudden yellowish in the face, or if immediately after having sucked, it is attacked with a sudden vomiting, shortly after begins to moan, is restless,
and

and now and then has startings, which are soon changed into an epilepsy. We may easily know, that all these symptoms do not proceed from the child's only having sucked too much, as in that case it finds relief by puking; but to make ourselves sure of this, we should enquire into it, from the other domestics. The greater number of children would certainly lose their lives by the nurses being exasperated, if this passion was not in general followed by quite a contrary one: this is the fear, I mean, and her apprehensions of being discovered, and dismissed from the service of the family. This last consideration, in a great measure, composes the emotions of the mind occasioned by the former.

We have already taken notice in the first chapter, how to prevent the child's being endangered, when the nurse has been exasperated, frightened, or affected by any other passion; but should the child already have got convulsions produced by such an effect, we must immediately inject a clyster. The fit being over, we ought to take care, that the child's stools are both in proper quantities and regular; they may be promoted in the manner above observed, and the nurse must also use those remedies recommended for that purpose. If notwithstanding this, the child on the following night is restless, has at times startings, we ought to give it a little *syrupus à Meconio, ph. Lond.* (or syrup of white poppies) in the manner recommended at page 24. and the next day inject another clyster, just two hours before the time of its being attacked the day before by the epilepsy*. The mother or nurse ought also carefully to avoid suckling the child immediately after having received any unexpected joy or for-

* In a family were twins, and each had his own nurse; they fell out with each other. The weaker child being suckled by its nurse soon after, it instantly became weak to such a degree, that it was unable to move hand or foot: it grew pale, and unable to shriek. Rhenish wine being warmed as fast as possible, napkins were dipped therein, and wrapped round the child. It recovered again, and another nurse was procured for it afterwards.

row. We have instances of this kind, where children have been seized with the epilepsy, and been carried off by it.

Children will also get this disease by sucking a nurse at the time her menses are upon her : the observations of physicians are filled with such instances. It may either be owing to the great pains and gripes these discharges are attended with, or to the woman's mind being more sensibly affected at this, than at any other time. Which ever of these are the cause, the child ought by no means to suck during that time ; and if the epilepsy has already attacked the child, we first inject a clyster as before ordered, and after it has operated a little, *syrupus à Meconio*, *ph. Lond.* or syrup of white poppies, must be given to it.

4. *Difficult dentition*, and the children at that time not having loose stools, is the fourth cause of the epilepsy ; but the convulsive motions are generally more confined to the face at that time. We may learn how to prevent and cure this by referring to the Chapter on Teething. During the fit we can do nothing more than administer a clyster ; but if the disease is in its infant-state, and attended but with little fever, the child crying continually, has startings during its sleep, or is very restless, then we may boldly give to it one or two drops of Dr. Jones's *panacea*, or of Dr. Sydenham's *laudanum liquidum*. This may be taken in any convenient liquid ready at hand : it may also be repeated once or twice, if judged necessary, and the dose carefully ascertained by the then attending physician : by these means we may be sure of preventing convulsions, and their returns too ; but if the child should have a fever, it ought either to be bled, or leeches applied upon its temples. See the Chapter on Dentition.

5. *Scabs repelled*, if they cause an epilepsy, may easily be known ; for should the child have had any eruptions, and by being exposed to the cold, or the scab anointed, it has thereby been more or less repelled, it is pretty certain the disease arises from thence. During the fit, all we can do, is to inject a clyster, and when it is over, the nurse ought to take a little
flower

flower of sulphur, the quantity of half a drachm, morning and night, in a little warm milk; or we give her every two or three hours a table-spoonful of the following camphorated mixture.

R. *Camphoræ* ʒß.

Sacc. Alb.

Mucilag. g. Arabic. ana ʒj. tritis in mortario vitro & adde Aq. Flor. Ulmariae, (or meadow sweet) ʒvj.

Syr. Baccis Norlandicis, g. f. M. Dr. ut supra.

We should besides, if in our power, cause the child to swallow a grain or two of musk, previously well rubbed with ten grains of sugar, which should be repeated once or twice a day *; if we can procure the scabs to appear again, the child will be saved for this time. What relates farther, either towards the cure or prevention of this disease, will be spoken of in a particular chapter towards the conclusion of this work.

6. *The small-pox, measles, and scarlet fever*, are sometimes accompanied with an epilepsy just before the eruption appears. Happily it is seldom dangerous, but on the contrary is an indication of the small-pox being of a benign or favourable kind: for this reason we give nothing for it, except what we intended for the diseases themselves, and which will be treated of in their proper places. It is sufficient, in order to distinguish this species, to know that the child has not had the small-pox before, and that the contagion, by being in the neighbourhood, may have been brought into the family by some one or other; and that the child has for three or four days past been affected with a fever, accompanied with the signs which exanthematic fevers commonly have. See fur-

* If this does not prove effectual enough, I find physicians recommend a very nasty cure: it is to put the child on a shirt, which a scabby person has previously wore; this occasions by its irritation a fresh scab, and makes the former one re-appear. Mr. Deidier cured, by this means, a hydrops occasioned by scabs repelled. See *Sauvages*, not. iii, ii. p. 431.

ther on this, under the proper heads. We may make ourselves pretty easy in this case, as we know the epilepsy preceding it, is a good sign. Notwithstanding this, I have heard of children dying of convulsions; and that even after the exanthematic spots had made their appearance.

7. *Worms* commonly cause the epilepsy by violent fits, and frequent returns. Happily this sort, as I imagine, rarely attacks children, whilst they live merely by sucking: for as yet, I have never observed any signs of worms in them, until they have had recourse to other kind of food. This species is one of the most difficult to know, for I have frequently seen children of a strong constitution to void worms, with such a composure of countenance, that it is hardly possible to judge of it by looking in its face. We have pretty good reasons to suspect their being affected with worms, if it often scratches its nostrils, has startings whilst asleep, and swallows as it were, whilst in that state; its breath of a bad and sourish smell; its mouth filled with water upon awaking in the morning, and its face frequently changing colour; if, besides this, the child has a disgust for food, sometimes a violent appetite, and sometimes to that degree, that it seems almost fainting, if it does not soon receive its nourishment; if its stomach is hard, and swells a little before the usual time of its eating; if it grows sick of sugar, or other sweet meats, is well one moment, and complaining the next of its stomach, and of the gripes round about the navel; if it has a few reachings, sometimes going away, and appearing at unexpected times, and without any manifest cause: but our apprehensions are wholly confirmed, if it has a little before voided worms. I have seen several children affected with convulsions from this cause, and always during the fit found the navel prominent.

However violent the attacks of this kind are, they may easily be removed by injecting a clyster of tepid milk, to which a little salt must be added in case the child is costive, otherwise not. The clyster ought not to contain any oil, honey, or sugar, because as worms are said to avoid these remedies, they remove further up in the intestines. In this manner we may
relieve

relieve convulsions, but they may return again, as long as the worms are kept alive and unexpelled, as their biting or sucking occasions another fit. We ought by no means long to neglect the means of expelling worms, as they increase in size and proportion according to the time they have been undisturbed. This subject will be more minutely inquired into in another place, and therefore let it suffice here only to observe, that young children ought every day to eat honey, and fresh carrots, when ever they can be procured. Children more advanced in years, ought to drink some mineral waters, but more especially bitter water (the *aq. Zeltherana*), and tho' its taste is very disagreeable, we may entice it to drink it, if in each glass something is put, which they are fond of: for instance, a piece of sugar, which by sinking to the bottom, is a temptation for them to drink it, that they may eat it as soon they have drank out the glass. Those small white worms (*ascarides*), which live in the lower part of the intestines, are the easiest to get rid off, by injecting a clyster of warm mineral water, to which we may add a little salt, as it otherwise would not purge.

8. *Cold fits* of a fever accompanying this disease, I firmly believe to occasion sometimes the epilepsy: for the convulsions returned with each paroxysm of the fever, and went off entirely, as soon as the intermittent fever was cured. A clyster immediately stopped the fit; but in these cases, as soon as the child was a little recovered from the feverish fit, I have given an emetic to it, with every possible precaution, and according to the method laid down at the end of the Chapter on Chin-cough. After the operation of this remedy, I have given the justly famous Jesuits bark.

9. *Gravel, or the stone*, is sometimes also found to affect children, and cause an epilepsy: providentially the gravel in children is a very rare disease in Sweden; and as they cannot, at so young an age, well point out their distresses, it is very difficult to discover whether the gravel is the cause or not. We may judge it so, if the child cries whenever it makes water, it being

sometimes of a sudden stop, or much voided at once, the child moaning all the time. If we find that its parents have had the *arthritidis*, gout or gravel, our supposition in a great measure is confirmed; and still more so, if by introducing the finger into the *rectum*, and carrying it forwards to the bladder, any thing hard and moveable is felt; but no kind of doubt remains if a stone is felt by the catheter.

During the fit the child ought to be bled, and several clysters should be administered: at first they may be prepared of three or four spoonfuls of warm milk, and an equal quantity of oil, with a little sugar, but afterwards of oil alone. We may make a poultice of flax-seeds beat, mixed with a little saffron and milk; with this we fill two bladders half up, and apply the one above, the other below the place affected; taking care they are constantly kept of a moderate warmth. Luke-warm baths are also of great efficacy. We may give internally a palliating milk, prepared from an infusion of mallow flowers, (*infusum flor. malvæ*) oil of almonds, the yolk of eggs, and a little syrup of white poppies, (*Syr. é Mecon. Ph. Lond.*): the proportion is this; half a pint of the mallow infusion, an ounce of cold expressed oil of almonds, half the yolk of an egg, and two drachms of the above-mentioned syrup; shake them well together in a phial, and give it to the child to drink by degrees until it finds relief.

10. *Theriaca*, *Diascordium*, *Philonium*, and other remedies of that kind, in which are contained opium, have already been mentioned as prejudicial when improperly given. Physicians have enumerated many sad instances of the death of children, or at least the epilepsy being brought on by the nurse's giving them these remedies. It is our business then to prevent, if possible, the nurse's or other ignorant people ever being informed of the name of opiates; the most difficult thing is to find out when the child has taken any thing of this kind, as it is generally done secretly: for the truth of this we must enquire strictly, from the other people of the house; and if nothing certain can be inferred from thence, we must then judge from
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the effects opium has upon the human body. The symptoms arising from having taken it, are, a quick pulse, heat, short and difficult respiration, sweats smelling not unlike opium, costiveness, and frequent urinating; the face appears red and puffed up, and the iris dilated; the blood flows towards the head, and occasions a giddiness, with a peculiar composure of the mind, either asleep or awake, or a great propensity to slumber. If we find out that any opiate is the cause, we immediately give the child some milk-warm water, to which is added a little butter, or oil, afterwards irritating the *fauces* with our finger or a feather, in order to excite a vomiting; if this does not succeed, we then inject a clyster, with a little salt, rub its feet with a flesh brush, and apply to the soles of them a stimulating cataplasm until the skin becomes red. Its head must be fomented with warm vinegar, and a sponge dipped in strong vinegar put to its nose. Could the child be bled, it would be of great service, but of much greater if leeches were applied to its temples. I shall not mention acids taken internally, although they are the most powerful in correcting the bad effects of opium: as in general we do not think these remedies so applicable to tender children, unless those before prescribed should prove insufficient. In the same manner we proceed in convulsions arising from having eat any poisonous plant; as for instance the root of henbane (*Radix Hyoscyami*) or the berries of the deadly nightshade, (*Atropa belladonna* Linn.) or any thing similar, which through imprudence or ignorance we sometimes lay hold of. The best antidote and cure is, first give them good vinegar, and afterwards an emetic.

The epilepsy occasioned by venereal acrimony, will be mentioned in another part of this work. Want of food will cause convulsions; for instance, the nurse's milk being dried up, and her concealing it; this may easily be cured by procuring another nurse. When this disease arises from strong and violent evacuations, they ought to be stopped, as may be seen in the chapter on vomiting and diarrhœa.

There are instances upon record by physicians, of convulsions or the epilepsy in children, occasioned by
their

their swallowing some blood, at the operation of cutting the tongue-string : in this case we ease them either by a gentle emetic, or a little syrup of rhubarb, and a clyster.

Tickling children is very dangerous : they may from that get convulsions, and even lose their lives ; as may be seen in Dr. *Van Swieten's Comm.* iii. p. 402, and Dr. *Robinson* on the spleen, p. 148.

We observe in general,

1. That the second, third, fourth and seventh species are the most common.

2. That the child, if robust, ought to be bled, and is something more than a year old, and not weakened by any other disease ; notwithstanding, the applying of leeches is preferable to bleeding.

3. That during the fit, something ought to be introduced into the mouth, so as to prevent the tongue being hurt.

4. That clysters are not only the best, but the most useful remedies during the fit, as they cannot swallow any thing in the height of each paroxysm ; for whatever we attempt to give them internally, generally runs out of the mouth again. Warm baths are generally serviceable, as they calm the convulsions so much, as they are able to take something internally.

5. Wrapping them up during the fit in warm rhenish wine, is of an incomparable effect, as I have frequently experienced. Poorer people may, in lieu of this, apply a piece of linnen soaked in warm brandy to the child's stomach.

6. That the epilepsy is not to be prevented by hanging round the child's neck the officinal root of vervain, (*Radix Vervena*) as I have known this preventative used by many children, who notwithstanding have frequently had convulsions.

Lastly, we may observe, to the great comfort and satisfaction of the parents of those children subject to convulsions, or the *epilepsia infantilis*, that they need not be apprehensive of its changing into the true epilepsy ; for it generally disappears by degrees, as they grow older and acquire more strength : this is owing to the sensibility of the nerves, (which has been before

before observed is the cause of convulsions in children) being by that time diminished *. In the mean time the child's parents should minute down every thing that happens to the child before, during, and after each fit; whether or not it ended with a reaching or looseness. Also if any thing is observed in the child's diet, nursing, &c. which occasions the fits to be more or less violent, or more or less frequent: this will be of infinite service in consulting with a physician, who by such a minute account will get a greater knowledge of the nature of the disease, and consequently be better able to cure it. It will also be of use to the parents, as from these observations they will not only learn the preventatives, as well as the means of cure: for instance, if they observe the fits returning every fortnight, and end each time with a looseness or a vomiting, they may easily perceive that in the first case the child ought to take, for three or four days running, a gentle laxative, beginning about the tenth or eleventh day after the last fit. In the second case, as the paroxysm ended with reachings, an emetic ought to be given in the same manner as above ordered, so as to avoid all flimes before the time the convulsions are expected to return. When the epilepsy returns every fourth week, we judge it to be then owing to the nurse having her menses; and if upon enquiry we find it so, we must not permit her to suckle the child at that time, as she then cannot help being exasperated even by any trifling matter, and

* By this we find that as we advance in years, we lose our subtler smell, taste, hearing, and sight; and that the nerves in the bladder and intestines, also lose their irritability by degrees, and that they do not so easily excite towards the necessary evacuations as in the younger years. In old people they are proportionably less, as they do not increase in this part as in the other parts of the body; they also lose by degrees their softness, and consequently in childhood are the most irritable. How can they then be said to have any tension? Dr. *Hillary* tells us that the children in the Isle of Barbadoes are so sensible, that they get convulsions by even the least noise. See *V. Haller's Elem. Physiol.* iv. 203. 294.

often to the imminent danger of the child. When the child has stinking breath a day or two before each fit, we then suspect it to arise from worms or a weak stomach, and as such, conform both to the cure and diet thereof. The flowers of *Cardamine pratensis*, half a dram for a dose, are recommended by Mr. Baker, in Medical Transactions, by the college of physicians, vol. i.

With regard to the *fraxinella*, time will convince us of its efficacy in the cure of the true epilepsy. It is a remedy much approved of, by that worthy friend of mankind, Mr. Stoerk.

C H A P. XI.

On the Looseness, or Diarrhœa of Children.

STOOLS thin and loose, and more frequent than usual, are called a diarrhœa. By the peristaltic motion of the intestines the stools are promoted; by the natural *mucus* filtrated from the blood by their glands the bowels are kept smooth; by means of that vapour, or steams arising from the pores of the *vasa exhalantia* in the *œsophagus*, stomach and intestines, the excrements are prevented from becoming hard. This vapour is again absorbed, and re-enters the blood by the *vasa lymphatica*, or *bibula*. The *saliva* or spittle, which is swallowed, promotes also the same. The gall is diluted by that humour, which the sweetbread (*pancreas*) separates from the blood, and is continually flowing to the largest of the *intestina tenuia*; both these promote the digestions and stools; but it is chiefly owing to the gall, that the bowels are excited to their peristaltic motion: for this reason it is, we find it so difficult in the yellow fever (*icterus*), to procure stools: also when the gall-bladder is pierced: also when the gall is much weakened by the great abuse of acid food and drink; as for instance, in the acid colic, called *colique de Poitou vegetale*. A diarrhœa may arise from whatever occasions a greater quantity to remain in the bowels than usual, or by any thing causing

causing the above-mentioned humours to be discharged in too great a plenty ; or from any thing preventing the *vasa bibula* from absorbing those liquids, and by whatever increases the peristaltic motion. By eating and drinking in too great quantities, the stomach and intestines are unable to digest the food, and from thence will arise indigestions and crudities, which by their acidity, irritate in part, and increase the *motus peristalticus*, and in part occasion a greater flux of humours, just as we see a grain of sand irritates the eye, and causes the tears to flow from thence. The same happens also when the gall is either too acrid, or is pressed into the intestines in too great quantities : for instance, when we are exasperated this happens ; also by the blood being acrimonious, as the liquids separated from it into the bowels, are of a similar quality, and their irritation occasions a greater flux of humours, and increases the peristaltic motion : for this reason a diarrhœa is always preceded by rumblings of wind, which is an indication of an increase of the peristaltic motion of the bowels. The same effect may arise from new beer ; it is upon this principle that pills of yeast are purgative ; change of water has the same effect, especially amongst those who use it for their common drink. Eating too freely of melons, has the same effect as water-melons, raspberries, and other fruits, or by sucking the inner bark of the fir in spring * ; from the insensible perspiration being obstructed it is frequently thrown upon the intestines, and consequently increases there the quantity of fluids : therefore those subject to costiveness, may promote their stools by rising early, as the perspiration is by this something diminished. The same, though in a more violent degree, is occasioned from the stronger purges, or from any purulent matter, which by a *metastasis* is discharged from any internal or external ulcer ; being sometimes first absorbed by the blood, rarely to the advantage of the patient, as it generally vitiates

* In countries where firrs abound, the people make very frequent use of the inner bark, which contains a very sweet and palatable juice. S.

this fluid, and melts it as it were, so that the body, unable to retain it, carries it off, either by a nocturnal sweat, or an incurable flux. The patient thus exhausted, dies like a lamp wanting oil. The humours are also increased in the intestines at their glands, and their pores are quite relaxed and corroded at their orifices; also if the *vasa bibula* lose their power of absorption, which is the case when their orifices are too relaxed, or shut up by slime, crusts of the thrush, small-pox, or measles; or, also should there be any obstruction in the liver, or mesenteric glands. They may even shut up by any acrimony in the guts, as what flows from thence by irritating and increasing the *vasa exhalantia*, or perspiring vessels, occasions a contraction of the absorbent vessels.

The urine in a diarrhœa, is in much less quantity than before, and is also redder than usual; it is therefore a good sign, when it is discharged in a greater quantity, and its colour is clear. This shews a less flux towards the intestines, and a more equal division of the fluids, in order that they may also dilute the urine. By this we learn the reason of our being obstipated by drinking mineral water, when it is carried off too soon.

By the same reason we judge of a diarrhœa's going off, when the patient falls into a profuse moisture, or sweat: therefore those, who use hard labour, sweat much, or frequently urinate much, are generally subject to costiveness: for this reason did Dr. Riverius cure himself of his diarrhœa, by means of the warm bath.

Reachings in a diarrhœa occasion frequently some good change, partly by diminishing the matter occasioning the flux, partly by causing a *motus peristalticus inversus*, and partly by shaking something loose, which was before adherent, and irritating in some part of the intestines.

A diarrhœa in a consumption shews that the patient approaches to his end; if this evacuation does not relieve other internal or external ulcers, it will then hasten his death. The same is to be observed of a diarrhœa in a dropsy; purging medicines are therefore prejudicial in that kind of hydrops arising from a weakened

weakened or corrupted stomach and intestines, or from obstructed perspiration. In this case they would still weaken the bowels, and hurt the digestion. They also obstruct perspiration, and dispose the body in the same proportion to absorb the moisture of the air by the absorbent pores of the skin. In wounds of the head they occasion great mischief, likewise to women in child-bed, and during their pregnancy. In ardent fevers, unless when the stomach and bowels are filled with crudities, they are prejudicial.

As long as a diarrhœa is unattended with a fever, does not diminish the appetite or strength, the gripes are not violent, and the patient upon going to stool finds himself easier, it ought not to be stopped: by such an evacuation, we are freed from a quantity of crudities or stagnant humours in other parts of the body, which might otherwise have occasioned more dangerous diseases.

We ought more especially to be cautious in not stopping a diarrhœa in those affected with pains of the head, or on either side of it, (*migrain*); with colds or rheumatic pains of the neck, eyes or ears; nor in those who have the *anasarca*, as a looseness is then often beneficial, as it is also when it appears in dentition.

A diarrhœa, when carried too far, ought to be stopped, otherwise the intestines would lose their digestive faculty, by being too much softened and relaxed: those fluids requisite for digestion are carried off, by which the blood not being diluted with a new and suitable milky juice (*chylus*), grows acrid, and unfit for the support of the body, which then pines away, its strength diminishes, the legs and feet swell, and either a consumption or a dropsy at last closes the scene.

It becomes too inveterate, when joined with fever, disgust for food, violent gripes, a weakness increasing after each stool, and the excrements being of an unnatural colour and smell, and no ease to be found in those diseases the patient had previous to the diarrhœa, which was expected would be of service: besides if we know that the patient has had a good stomach, has not overloaded it, has taken much exercise, as other children, we then ought to stop it early;

otherwise

otherwise it would degenerate into an habitual diarrhœa. We ought to avoid every thing that might occasion a diarrhœa in the months of July and August, when the days are hot, and nights cold, as it might easily degenerate into a bloody flux. From what has already been observed above, we find there are many kinds of diarrhœas; but I shall enumerate those only to which children chiefly are subject.

First Species.

The younger we are, the easier are stools procured, and also sleep; but the more we advance in years, the more costive and restless we grow: for this reason a tender child at the breast, sucking freely, and having three or four stools every day, ought not to be looked upon as having a diarrhœa.

At so early an age as this, they are rarely affected with this disease, and whenever it happens, it arises from either the mother or nurse having neglected the child, or from their having a corrupted milk. They neglect it by not adhering to the rules laid down in the Chapter on Nurses: especially if they allow its feet and stomach to catch cold by hanging wet clothes in the same room to dry; by the nurse's suckling her child too often, or whenever it cries, or by suckling it in the morning before she has eaten any thing, or by giving it hard food before it has gotten its teeth, or by her feeding too often on salt meat, or much fruit, cucumbers, berries, acid drink, or by her having the gripes, without complaining and being cured of them first; by changing the nurse, and giving the child one whose milk is younger. What are the requisite qualities for approving a nurse's milk, may be seen by referring to the above quoted chapter.

Those therefore, who have the management of children, should adjust these matters, and for the future take better care of the child; but if, notwithstanding their cautions, the diarrhœa should continue, we must give the nurse some of the powder ordered in the Chapter upon Gripes, (which see), and rub well the child's stomach with a little balm of nutmegs; or with some of the following composition: Take of

Theriaca

Theriaca, two drachms,
Balm of Nutmegs, one drachm,
Oil of Cummin, six drops. Mix them.

Spread this upon a piece of thin leather, and apply it to the child's stomach. Should it be requisite, we may give a clyster of milk, with a little white starch, once or twice. If this disease is occasioned by the gripes, we must use the remedies against them.

Second Species.

If a child eats and drinks in such quantities, that the food cannot be digested, the quantity alone will occasion a diarrhœa, by reason of its weight and irritation.

Food having been eat, that is bad in respect to quality and quantity, undergoes the same change in the stomach and bowels, as if we were to keep it in any vessel, equally warm and moist with that of the stomach: that is to say, it will acquire an acrimonious quality, which would irritate and cause a diarrhœa. For a further explanation of this see the Chapter on Coughs, especially in coughs of the stomach, and of vomits, the fourth species, where the signs and different natures of crudities are taken notice of.

This second species is the most common, and ought not by any means to be stopped hastily, as this carries off the cause which produces it, and which by being retained, would occasion more dangerous diseases. Should it not go off spontaneously, but the gripes increase, much rumbling felt, and the patient becomes much weaker, we are then obliged to relieve it by remedies, and as in general it is accompanied with loss of appetite, and a disgust for food, an emetic would be of great service, and should immediately be given.

Should there be no kind of loathing, but gripes and wind only, we then give a little rhubarb, eight or twelve grains in powder, according to the age of the child; or we may give it a little elixir of rhubarb, without sugar, a tea-spoonful or two; or a little of the rhubarb-tea (see the Chapter on Vomiting) to the quantity of two tea-cupfuls; sometimes a single dose

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proves

proves sufficient, and at other times it is requisite to be repeated two or three mornings successively, especially in those who have lived irregular.

If by the signs mentioned in the Chapter on Vomits, we should find out the nature of the crudities, we must then use the remedies recommended for each kind, either separately or mixed with the rhubarb; for instance, if they arise from acidities, we join to the *magnesia alba* some of the powder of oyster-shells, or dissolve some *sal Tartari* in the elixir of rhubarb: if they are owing to putridics, the patient must drink some limonade, or almond milk, &c. their drink ought also to be thin rice or millet gruel, which we make into almond milk, by the addition of some sweet almonds: if the child is very weak, we then give a little white wine whey; or should it at this time be judged necessary to stop the diarrhœa, we may infuse in warm whey a piece of cinnamon and some toasted bread, strain it, and when cool, give it some to drink; when the crudities are owing to acidities, weak flesh-broth is by much the best.

If the diarrhœa notwithstanding continues, it will then be requisite to apply to its stomach the preparation at page 49. over this we lay a napkin, and a piece of thin board, to preserve the warmth better. We give the child dried bilberries to eat; the richer people may apply the *emplastr. stomach. Ph. Londinensis* upon the stomach; but if the disease does not yield to this, we give it a powder prepared of

Red Bole, ten grains,
Gum. Tragacanth. five grains,

after every loose stool. This powder may be taken in a liquid prepared of two drachms of *gum. Arabic.* or gum of cherry-trees, dissolved in a quart of thin soup, rice, or millet gruel; or we dissolve two drachms of wax, stirring therein as much powdered oyster-shells as it will take up, and give it as the former. At bedtime we may give a few grains of *theriaca* in either a little milk, or weak cinnamon water (*aq. cinn. simpl.*): many have been cured by drinking milk, in which a drachm or two of thin slices of wax has been boiled. Others have met with the desired effect, by
drinking

drinking chicken broth, wax having been previously put into the chicken. Others again have been quite relieved by eating an apple or two with wax therein, and baked over the fire, so that the wax has been absorbed into the substance of the apple. However, the rhubarb or the emetic ought always to be taken before any of these remedies, and they seldom fail of succeeding.

When the disease at last is stopped, we endeavour to restore strength to the stomach and bowels, by the stomachic elixir, and a proper diet, taking care not to overload the stomach.

Should the child be attacked with a head-ach, or any other distemper, as soon as the diarrhœa is stopped, it gives us some reason to suspect we have rather been too hasty in stopping it; and that there still remains something in the intestines, which ought to have been first carried off. It is then requisite to give the child a little rhubarb again, in any of the forms above-mentioned.

To this kind belongs also that violent diarrhœa, which comes on during the use of mineral waters, and arises from having eat too many strawberries the night before. It may easily be relieved by taking a little cinnamon-brandv.

Third Species.

When the orifices of the perspiring and absorbent vessels, or those of the intestinal glands, are relaxed to that degree, that the humours are as it were flowing from them into the bowels, and if they are not received there by the absorbent pores, they will occasion a dangerous diarrhœa, which might soon emaciate the patient.

This kind may easily be distinguished from any other, by being unattended with pain, or gripes; the excrements having nothing purulent, or anything unusual in them; there are not any signs of crudities either; those affected with this kind, are weak and pale, with loss of strength.

As it, for the most part, carries off all the humours from the body, the sooner we stop it the

better; it may be done, 1. By giving the child dry food, and abstaining from soups, butter, or any thing similar, which would increase the laxity; its drink should be water, in which a little cinnamon, or bitter orange peel, has been boiled, strained off, and cooled. 2. By giving them a tea-spoonful of the chalybeate wine, two or three times a day, in a little cinnamon water, or any other steel tincture; or by a few grains of the *Æthiops Martialis*. The celebrated Dr. de Haen lays a great encomium upon the powder of an herb, called *lysimachia vulgaris flore purpureo*.

This kind of diarrhœa arises also in consequence of others being neglected, or suffered to remain too long; a circumstance very frequent among the poorer people.

It is also a consequence of sorrow, sudden fright and jealousy. It is true, that children's sorrows are of no long duration, but are soon forgot, unless daily renewed by a bad mother, or a teacher. Envy or jealousy will frequently take place in a child, when it observes the other children more caressed than itself. As long as the cause remains, the disease cannot be removed; but that once taken away, it rarely requires any other remedies, except those above-mentioned.

Fourth Species.

If children are suffered to play late in the evenings, exposed to the open air, during the summer season, or harvest, when the days are sultry, and the nights chill, they will either catch cold in the head, or breast: get a *diabetes*, or will be affected by a diarrhœa, generally accompanied with gripes. The pores of the skin being a great deal opened in the day time by the heat, are shut up in the night by the cold: by this means the perspirable matter being repelled, goes to the intestines, and occasions a diarrhœa. If they lay down upon the ground to rest, when warm and sweating by exercise, they will get it much sooner. Children have a very thin and sensible skin, therefore they sooner feel the effects of heat and cold, as do all weak people. Robust people, whose skin by means
of

of hard labour, and coarse linen, is become as thick as leather, are seldom thereby affected.

This species is easily known from any other, by the circumstances already mentioned ; its cause is also taken notice of. With respect to the cure, it is pretty easy ; we ought at first to cleanse the child's stomach and bowels by an emetic, or a little rhubarb, should it be found loaded with crudities, which may be known by the symptoms mentioned in the Chapter on Chin-cough. Afterwards we promote perspiration, by putting the child into a warm bed, giving it an infusion of elder flowers (*flores sambuci*), and applying to its stomach three or four sheets of blotting paper, soaked in warm brandy, or rather in camphorated spirits, previously warmed over the fire in a deep pewter plate, and afterwards wrapped up in a thin linen rag. The diarrhœa generally ceases as soon as any moisture or sweat is procured ; but if notwithstanding it should continue, and the gripes also, it would be best to give a little rhubarb once more, and at bed-time a little *theriaca*, to which we may add a grain of camphire. This may be taken in a little of the above-mentioned infusions.

Fifth Species.

There is another kind of diarrhœa, which sometimes affects children, that live upon much fat food, as pork, fat pan-cakes, or bread and butter. Rancid crudities will be generated from these, causing by means of their acrimony a painful looseness with gripes. Physicians term this kind of diarrhœa *biliosa* ; as it also arises from a very acrid gall being in great quantities pressed down into the intestines, either by violent passions, or becoming acrid during hot and dry summers, and in the harvest time, when the perspiration being retained by any cold, it will occasion either a very violent fever, or a diarrhœa which prevents this fever, and unless this evacuation happens they can hardly be cured.

From the above-mentioned circumstances, and also the excrements appearing yellowish, green, &c. we distinguish this species from the others ; and notwith-

standing it is a very obstinate kind of flux, it frequently prevents and cures pains in the stomach, nausea, oppressions, reachings, colics, intermittent and bilious fevers.

Therefore this evacuation ought not to be too hastily stopped, but the rancid crudities, or acrid gall, should be first diluted, so as the diarrhoea may not be too violent; this we procure by giving the child, by degrees, plenty of milk-warm water, or some whey made with the juice of limons, or barberries, or with vinegar, sour bread, or hips (fruits of roses), buttermilk well strained, almond milk (*emulsio Arabica*), mallow tea, or millet gruel. In the interim we promote the evacuation with a few cups of the rhubarb-tea already mentioned, or by a drink prepared of an ounce of tamarinds boiled in half a pint of water, and strained off. Should it not yield to this, we must then stop it with six or eight grains of rhubarb toasted, given after every loose stool; or by a mixture of half a dram of *succus cathechu* dissolved in half a pint of water; or by some soup in which we have boiled plantain leaves (*folia plantaginis*); or in case the gripes do not cease, a few grains of *theriaca* towards evening.

We ought never to omit restoring strength to the stomach and bowels, by means of convenient food, the stomachic elixir, *globus Martis* (*boule de Mars*), or the chalybeate wine.

Sixth Species.

When any one by ignorance has given too strong a purge to a child, it will thereby be affected with terrible gripings, pains in the abdomen, convulsions, &c. and even sometimes lose its life; we save it, by giving it a quantity of fat soup, warm milk, and oil, cream or fresh butter. It would be imprudent to give any astringent remedies before the purge is expelled the body, because its retention would corrode and inflame the intestines: for this reason we give a clyster of similar remedies, with an intention of lining the bowels as it were, to lubricate them, to dilute, and by that means blunt and weaken the
 physick.

physic. When the evacuation begins to decrease, we may then according to the child's age give a few pargorics: for instance, a drop or two of *Laudanum liquid. Sydenh.* in a little milk; taking care not to be too busy in giving this. There are instances of its proving deadly by retaining the cause, as are related in the *Acta Edinburg.* tom. iv. n°. vi. where is mentioned a case of one, who by ignorance took six grains of *tart. emeticus*, which produced vomit and diarrhœa; but by taking twenty drops of *Laud. liquid. Sydenh.* in order to stop them, death was the consequence.

Professor *Cellarius* was more fortunate in his mistake; he took all the purging pills at once for a deafness, which were to have been taken gradually in the course of several days: after he had found out his mistake, he afterwards drank a quantity of soup with such good effect, that the purge operated but moderately, and his hearing was restored.

Seventh Species.

When a diarrhœa arises from scabs, or other eruptions being repelled, it may be cured by the remedies recommended in that Chapter on Cough.

Eighth Species.

That kind of diarrhœa accompanying the small-pox, is treated of in its proper chapter.

Ninth Species.

That kind arising from the contagion of the measles, is treated of in the same chapter, as its principal disease.

Tenth Species.

That diarrhœa which succeeds the thrush by the falling off of the crusts, and is thereby frequently tinged with blood, is already treated of in the Chapter upon *Apthæ*. The following remedies are in this kind of great service.

E 4

R. *Sperm.*

R. *Sperm. Ceti.*

Mucilag. g. Arab. ana ʒij.

Mixtis adde

Aq. Cinnam. S. V. ℥ʒ.

Misce agitando Dr.

The dose is a spoonful every hour*.

O R,

R. *Butyr. Cerae Bat. ʒʒ.*

Mucilag. e. g. Arab. ʒj.

M. terendo & adde

Aq. Cinnam. C. Vino.

Syr. Diacodii, ana ʒj.

Decoct. Hordeat. perlat. ℥ij. M. Dr.

The dose is a spoonful every hour at first, and afterwards after each stool only.

Eleventh Species.

When the food is carried from the body quite undigested, and runs as it were through the intestines, as soon as received there, the child is then affected with a kind of diarrhoea, commonly known by the name of *lienteria*. This disease is without pain, which circumstance, with those already-mentioned, sufficiently distinguish it from the other species. It is generally in consequence of some other kind of diarrhoea of long duration, bloody flux, thrush in the stomach, or from any disease which by length of time has relaxed the stomach and bowels to a great degree, and impaired those juices necessary towards digestion (*In Gottingische Gel Anzeigen, n^o. 135.*): I have afterwards found it the learned Dr. *Vogel's* opinion, that the disease arises from the too great irritability of the stomach and bowels, by which their peristaltic motion is increased: the cause, as he thinks,

* Should the cinnamon water be good, it would probably be too pungent, in which case we may take ʒʒ less of it, and in lieu of it add as much rice gruel.

is a quantity of *mucus*, or a bilious and sour, or scorbutic acrimony : he proposes therefore as a remedy an emetic and a purge, which strengthens the stomach and intestines : sometimes *anodynes* are given also. He seems to be in the right ; this learned man has therefore given a very different view of this and the following distemper. In diseases rarely obvious, we are obliged to copy from each other : this is the most dangerous kind, as the body, unable to receive any support, must consequently pine away ; sour eructations are a good sign in this disease, as they shew the retention of the food, and its beginning to be digested.

When old people are attacked by this disorder, they are soon carried off.

1. The children of the richer people, may be cured by adhering to the diet I have prescribed for ricketty ones.

2. Wearing continually on the stomach the *emplastrum stomach. Londinensis*.

3. By being anointed morning and night with a little balm of nutmegs on their back all along the spine : it ought every time to be well rubbed in with a warm hand.

4. Taking every day according to its age 20, 30, or 40 drops of *vin. chalybeat. Lond.* a little before dinner-time, in some *aq. cinnam. f. v.* And

5. By taking night and morning three of the following pills :

R. *Extr. Cort. Cascarill.*

Æthiops Martialis Paris. ana ʒij.

Syr. Cinnamon. q. i. M. ft. pil. pond.

gr. ij. fol. lunæ obduct. Dr.

Spaw water from the Pouhonner spring is also a good remedy in this disease.

Poor people ought to confine their children, as much as possibly their circumstances will allow, to the above-mentioned diet, and use night and morning the chalybeat wine. In order to render the expence of this wine less, they may make it with the white French wine, instead of the Rhenish, and it may also be taken in water where a little piece of cinnamon has

has been boiled. *Forestus* cured one of his relations with a pounded nutmeg, mixed in the yolk of an egg, and afterwards baked upon a hot brick.

A lady being affected with this *lienteria* during her pregnancy, being half gone with child, was cured by half a drachm of the *fabæ pechurei*, several other remedies being tried without effect.

Twelfth Species.

Children are subject to another kind of diarrhœa, which physicians have termed *fluxus cœliacus* *. Those who have this disease are affected with gripes, and a violent purging, which is not continued, but comes on now and then, and all at once. Sometimes the excrements have an insupportable stench, and at other times are void of any; their colour is various, as grey, yellow, red, brown, and sometimes tinged with blood. The appetite at times is very great, and sometimes changes into a disgust for food. The patient looks pale, is lean, pines away, and loses his strength; his hands and feet swell, the stomach is puffed up, and feverish symptoms come on; the child is troubled with wind; the mesenteric glands are obstructed; and when the humours become more corrupt, the liver, spleen, and the large gland lying behind the stomach swells, and grows hard; the cause of this disease seems therefore to consist in a corruption of the whole mass of blood, but more especially the digestive humours; because when they are vitiated, they injure the support in the intestines, and make the stomach and bowels lose their strength.

From this we find, that a *fluxus cœliacus* is a severe, tedious, and obstinate disease; and is either a *cachectic*

* The worthy Archiater and Profess. R. A. *Vogel*, in the year 1768 published a dissertation called *Fluxus cœliaci genuina notio atque ratio exposita*; where he shews that the latter physicians have been mistaken in respect to this disease, and that the milky juice (*chylus*) is not carried off by the excrements. The great authority of Dr. *Ballonius*, whose reputation in other respects is well established, has led us all successively into this error.

itself, or at least is accompanied with a similar one. Emetics given with great precaution are requisite in the cure of this disease, sometimes laxatives of rhubarb, and afterwards strengthening remedies given for some time together, as preparations of iron, and good stomachic elixirs, such as I have already given the composition of. The diet recommended in the Chapter upon Rickets, is of infinite use here; if when we have put a stop to the diarrhœa itself, we still have reason to suspect, that the glands in the mesentery, liver, spleen, or pancreas are obstructed, then the abdomen ought frequently and gently to be rubbed.

When the mesenteric glands are obstructed, and become hard, the stomach also growing hard and puffed up, it is very difficult to remove, and requires a long time. The whole belly ought then to be well rubbed with a warm hand, or a piece of flannel. The child ought to ride about in a little cart, or carriage, and at times play with other children, and in the open air, whenever the season will allow it; its drink should be weak mead, or whey curdled by the white of an egg; but this milk ought to be taken from a cow, which has just calved, and has fed upon green grass during the spring, and in a pasture where she can get running water, and take shelter under the shade of the trees. Such milk as this, is the juice itself of the herbs, and has an excellent dissolvent quality, as it is generally so thin, that it may be drank without being previously curdled: if any signs of acidity appear, the child must besides use the pills of *ossa Helmontiana*, (see the Chapter on Rickets), which correct and prevent acidities, dissolve all tenacious humours, and consequently are of use here; but for the cure of the obstruction and hardness in the mesentery, we have scarce any more certain and powerful remedy than the *pil. e cicuta* or *conio* of Dr. Stork, which may be taken from 1, 2, 3, 4 grains every day, and sometimes a larger dose, drinking after it either weak mead or whey; we must begin with the smallest dose, and increase it according to the child's age.

60 DISEASES OF CHILDREN,

Should this cœliac flux be occasioned from any cicatrice in the bowels, as some pretend to have seen, it must be incurable; it seems to me an impossibility that any one should get the better of a dysentery, where the bowels are affected to such a degree as this.

Thirteenth Species.

It sometimes happens that children are affected with a diarrhœa, where the excrements are mixed with purulent matter; this generally follows upon a severe dysentery, or any inflammation of the bowels, mesentery, liver, pancreas, stomach, or the breast, which not having been resolved, suppurates. We judge by the above-mentioned diseases having preceded this, that the child has been affected with some internal boil: for instance, if it has been indisposed, feverish and hot after dinner, or has in the evening its hands hot, red spots upon the cheeks, lips and tongue dry, little or no appetite, sleep short, sweats during the night, its strength and fleshiness emaciated: it is the same with any internal inflammation, as with an external one; the affected part becomes inflamed, hot, red, swelled, and painful. If the inflammation is not resolved, it suppurates, and the boil is either opened by nature or art, and the matter is discharged: should the tumour or boil not burst of itself, and from our neglect have been prevented (thro' fear of hurting the children, natural among parents) from making any incision, the purulent matter (*pus*) becomes acrid, thin and corroding, is gradually absorbed into the blood, causing small irregular shiverings, and a consumptive fever; the blood in the mean time grows corrupt, loses its gluey and nourishing quality, just in the manner as when the white of an egg (*album ovi*) putrifies: the body and strength both consumes, the humours by being exhausted decrease, night sweats come on, and at last an incurable diarrhœa, which physicians call *colliquativa*, because the blood is melted away as it were, which is in consequence of this Thirteenth Species we here treat of, and is sometimes called *diarrhœa purulenta*. It sometimes

times happens, but not once in a thousand times, that the suppurating matter being taken up by the absorbent vessels, and entering the veins, does not mix with the blood, but is carried along with the circulation to the reins or intestines, is there emptied, in the first case along with the urine, and in the latter with the excrements. An instance of this kind is to be seen in *Misc. Nat. Cur. Dec. 2. Ann. 2.*

A boil in the loins disappeared in the night preceding the day it was intended to be opened, and the purulent matter was carried off by stool. In the same work, *Dec. 3. Ann. 2. obs. 2. p. 6.* is mentioned a large swelling (*tumor*) on the arm being cured by purulent stools. See also *An. v. & vi. obs. 281. p. 635.*

But few are so fortunate as this, nor do we know any remedy that is able to prevent the blood's mixing with the purulent matter: in inflammatory diseases the blood has acquired a quality of not mixing with the water the patient drinks, it running off quite clear and colourless; if we mix any thing of a soapy nature, for instance sugar, or electuary of currents, or such things, it then enters the blood.

Internal ulcers, from whence the matter has not a free and easy issue, are incurable. We are hardly able to cure those from whence the discharge is free.

If the ulcer is in the bowels, or mesentery, or at least discharges into the intestines, we have yet some hope left, unless it has already corroded through the guts, and part of it enters the blood.

The number of glands in the intestines are the reason of these ulcers becoming so often cancerous; we have however some instances of wounds in the stomach being healed up; but when they are in the liver or lungs, we have scarce any hopes of a cure, unless we know they are only upon the superficies of those *viscera*; as that part of the lungs may adhere to the *pleura*; or the diseased part of the liver may become attached to the adjacent parts, which generally happens during the time of inflammation. If a free discharge of the matter is procured by any external incision, the ulcers by this may be kept clean and healed: we have instances of this; otherwise we must endeavour to draw away the purulent matter

by some corroding remedy; for instance, apply externally (*causticum*) an artificial ulcer (*fontanella*), or a *setaceum*, opposite the part affected. This ought to be done soon, and before the matter has acquired an acrimony, or corroding quality, or has begun to enter the blood, and vitiate that fluid; some few successful cures of this kind ought to encourage us to try further these remedies.

From what has been observed, it plainly follows that a purulent diarrhœa ought not to be stopped: if the matter goes off whitish, and of one colour, we may hope for a cure. All that we can do, is to order the patient a very austere diet, to abstain from all hard and salt food, meat, and whatever occasions a heat; and that in the spring he must live only upon the whey of such milk as has been above-mentioned; afterwards upon butter-milk, water gruel, thin soups in which plenty of greens, as spinnage, chervil, endive, sorrel, &c. has been boiled, and afterwards strained off. Seltzer water (*aq. Zeltherana*), mixed with milk; tisans of the *Switzer* herbs, with milk and a little clarified honey: should this be attended with gripes, we must then give towards bed time some paregorics; for instance the *confect. Japonica Edinb.* or some similar remedies. If the diarrhœa is violent and frequent, we must then give some *rheum tostum*, *succus catechu*, *Æthiops Martialis*, *cascarillæ extractum*, or such things, although by this we occasion the purulent matter to enter the blood; but necessity has no law. Balsamic remedies, such as balm of *Peru*, myrrh, styrax, &c. I have never as yet found of any service; they heat considerably, increase the inflammation in the margins of the ulcers, and also the purulent matter by which the ulcer grows larger. We may expect some relief from the Jesuits bark with honey of roses given between the paroxysms of the fever. A child that had a *diarrhœa purulenta* after a chin-cough of long duration, was cured by drinking a tisan of roses, milk-whey, and a little honey, and continuing its use a long time. An officer was also kept alive 7 years by this diet, his disease being an ulcer in the liver; all this time he was almost able to do his duty; he was at last affected with a dropsey (*anasarca*), and though
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the water was evacuated three times, it however got the better of him. He was opened after death, and a large ulcer found in the liver, which had burst, and discharged itself into the gall-bladder (*vesica fellea*), and from thence down into the intestinal tube. A nobleman of a middle age, being affected with this kind of diarrhœa after an inflammation in the liver (*hepatitis*), lingered for the space of eight years by means of the same diet, and died at last quite emaciated of a consumptive fever. His diarrhœa was sometimes so violent that I was obliged to stop it, which could not be done by any other remedy than roasted acorns beat into a powder, and taken in water. I was also called to a gentleman towards the close of his life, who was affected with an ulcer in the bowels, and a painful diarrhœa of long duration. He was only 27 years of age, and all my efforts to cure him proved ineffectual. His constitution had always been strong, he had taken very little care of his health, but abused it in every respect, once especially very rashly exposing himself to the cold, ever since which his excrements became loose, in colour brown and tinged with blood, but without gripes. In hopes of freeing himself from this painful disease, he had according to the advice of some person or other, drank whey curdled with alum, from whence arose pains in the bowels, and gripes; a hardness remained in the right side, and an obstipation for ten or twelve days, which could not be relieved by any laxatives; but was affected mostly for the space of half a year with costiveness. At last a shoemaker promised him a cure; this quack brought out of the sea some loggs of birch wood soaked through, putting them into an oven previously heated, and placing them in an oblique direction, so as to collect that milk-coloured juice, which was expelled by the heat, and received into a vessel below. The patient drank once of this preparation without effect, and three days after repeated it, and from that time was affected by the most painful rumblings of wind in the stomach, accompanied by a diarrhœa, and such violent gripes, that he frequently bit several holes in his tongue, as several marks were to be seen thereof afterwards. Sometimes water was evacuated with his stools,

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stools, and sometimes purulent matter of various colours, and sometimes resembling bloody glands. Towards the end of his life he had a slight consumptive fever, his legs swelled, and every other part of him was merely skin and bone. Nothing afforded him more relief than the *elect. è scordio.* or *confect. Japonica Edinb.* which only lasted eight or ten hours; but when during the night he had sometimes 70 or 80 stools, I was obliged to let him chew and swallow a quantity of roasted pease, burnt in the same manner as coffee-beans. The effect of this was, that he was always freed from the gripes and stools for upwards of three days together.

Fourteenth Species.

We have already mentioned that sort of diarrhœa appearing at the end of consumptions, or a dropsy, or where the purulent matter, from any internal or external ulcer, has entered the blood, and melted it as it were. It is called *diarrhœa colliquativa*, and is incurable; all we can do in this case, is to prolong the patient's life for a little while, by applying small clysters of milk with starch, in which we may put a little brandy; or 10, 15, to 20 drops of *Laud. liq. Sydenh.* or we may prepare one of half a pint of milk, 3 ℥ of *theriaca*, or of lime-water, *confect. Japonica*, and *bals. Locatell.* previously dissolved in the yolk of an egg. I have known half a drachm of the *Faba pechurei* taken now and then to relieve such a diarrhœa for a fortnight in a patient dying of a consumption, though I must confess it has frequently failed.

C H A P. XII.

O F T H E S M A L L - P O X .

IT is uncertain, at what time the small-pox first made its appearance in *Sweden*; but it is very well known, that it first came from the *Arabs*, from thence went to the *Ægyptians* in the year 622, or 640, and into *Spain* in the year 714. It was already a disease generally known in *England*, in the year 1270, or 1280. From *Europe* it was carried over to *America*; from *Denmark* into *Greenland*. This disease has always been found exceedingly lethiferous in places, where it appeared for the first time; and becomes milder after having continued there for some time. Nevertheless more people are carried off by it, than by the plague.

Ever since the introduction of the small-pox into *Europe*, it has always remained there, and spread from one place to another. The contagion is more obvious in large towns, as people in greater number, and from many different places, resort here. Likewise in universities, as many young people are collected there from various parts. One single person may convey the contagion to a place, either by his baggage, or by being infected himself. Hence we learn, why the small-pox so seldom appears in nunneries.

In the month of *February*, in the year 1755, there was not one single person in *Upsal* affected with the small-pox. A student conveyed it there from *Oerebro*, this latter place being infected, consequently the contagion was conveyed from *Oerebro* to *Upsal*. Another student was infected, and died; his brother went from *Stockholm* to *Upsal*, in order to take care of the burial, and carried the infection with him, in returning to *Stockholm* again.

In the year 1718, a *Dutch* ship went to the *Cape of Good-Hope*: three children who had lately had the small-pox were on board of it. At the arrival of this ship, the linen which was used during the disease,

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and which had been put by in a chest, was sent ashore in order to be washed. Those employed in washing them, became immediately thereby infected, and the contagion spread further up in the country, and did not cease until the *Hottentots* threw up a wall, and keeping watch there, prevented all human beings from advancing further inland. This put an effectual stop to the disease.

From this we find the small-pox to be a contagious distemper, affecting only those who have not had it before, and in whose fluids there is a disposition to receive the infection. Thence we justly conclude, that the poison of the small-pox is not bred in the air, neither propagated by that element; and that a village or town might be preserved from the small-pox, if the same precautions were taken against that disease, as against the plague. Nay, a whole kingdom would always be freed from the small-pox, if all those who have not yet been infected, were inoculated at a time: their clothes which they had used during the disease, ought to be buried in the earth, and the infection should likewise be prevented in the same manner as in the plague.

It likewise appears from this, that when the small-pox is in one or two houses of a town, there is not any inevitable necessity that it should spread further; it certainly may be avoided, if such dry nurses only are chosen, who before have had the disease; the cloaths of the patient afterwards buried, and the intercourse between the house of the patient and others prevented for some time. This at least would preserve others for a time, till the infection is conveyed there again from other places.

The small-pox is propagated,

1. When a person who has not had the disease, visits any one who actually is infected, then touches him, or absorbs the contagion by the breath, or by the pores of the skin. I have myself sometimes observed, that eruptions similar to the small-pox have broke out on those, who have nursed patients during that disease, or have sat by their bed-side for several days together; but such eruptions were attended with no fever, nor did they leave any marks after them.

A similar and very remarkable instance may be read in *Philosoph. Transactions*, No. 373, and another No. 390. Dr. *Kirkpatrick* mentions that he, on such an occasion, got a pustule on his upper lip. See his *Analysis of Inoculation*, edit. ii. p. 21.

2. By handling the clothes of the patient: it is not ascertained for how long a time the infection will adhere to clothes; and preserve its activity; but this we know, that it may be preserved over all the winter, and the next spring be fit for inoculation, if during that time it has been shut up in a close box. Therefore it seems possible that a person, who has not yet had the small-pox, may be infected by handling linen or clothes, which have been used during that disease, notwithstanding they may have been put by for some time amongst other clothes.

3. By being bled with the same lance that lately has been used for a person affected with the small-pox. In the year 1741, Mr. *V. G.* was bled, the lips of the wound suppurated, and grew sore, after which he got the small-pox. The same happens in an inoculation.

4. By purchasing; as has been customary in *Saxony*, in *East* and *West-Gothland*, and in the principality of *Wales*; in the former places the child is carried to a person, who has a benign small-pox, and any one desires to buy five or seven pustules. The money which has been agreed upon is put, one piece after the other, on a ripe and broken pustule, in order that some of the matter may adhere to each piece; these coins are then tied to the legs of the child, and thereby a part of the matter is absorbed through the pores, and causes the small-pox. In the latter place, the skin is pierced with a pin, and some of the matter is put on the wound. Both these methods are in reality a sort of inoculation.

5. By inoculating as the *Chinese* do: they promote the infection by dipping a piece of cotton in the ripe pustule, and afterwards putting it into the nose.

6. By inoculation in the *Circassian* manner: this is a method now very much improved by the English, and made use of, both by them, and many other nations, with great success. The excellent reflections by

Mr. *Condamine* on the inoculation of small-pox, translated into *Swedish* in the year 1754, by the care of his Excellency Count *Scheffer*, Great Counsellor of the kingdom, merit a careful perusal.

The small-pox is very difficult to know in the beginning. One may assert it to be that disease,

1. If we hear that the small-pox is now rife in the neighbourhood.

2. If we know that the patient has not had it before, and has been lately in the same room where a patient lays with the small-pox, or who lately has had it; or if he comes near a person who a little before has visited a patient affected with the small-pox, or touches, or wears such clothes as are infected.

3. If those signs appear, which generally precede exanthematic fevers; such as weakness, without any apparent cause, chilliness and shivering, with a succeeding heat, pain in the loins, heaviness across the breast, and an inclination to groan.

4. We are still more convinced that the patient is infected with the small-pox, if his face seems to be puffed up, he feels a heaviness over his eyes, and some tears flow, especially from the left eye; but these being now less hot than in the measles: besides, if he feels a pain in the pit of the stomach, when it is pressed with the hand, has likewise a dulness, and great propensity to sleep, even on unusual hours, or has startings during his sleep, and a great inclination to vomit*.

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* The warthy or stony, and the chrystalline or watery small-pox, break out within 24 hours, and disappear within five, or at most six days. The eruptions of the former sort are hard as stones, and may leave some scars after them; the latter resemble clear water-bladders. Before breaking out, they are attended with anxiety in some persons; but after the eruption, the evil is generally over. A lady 48 years old, became affected with both these sorts at once, accompanied with so great an uneasiness and anxiety, even after the eruption, that every one present took it to be the true small-pox. The report would certainly have spread,

The fever continues, but not equally violent, till the breaking out of the pustules ; a little before that, some children become convulsive, which is commonly a good sign *, or signifies a benign sort of small-pox, provided the child is not besides affected with a difficult dentition. These days constitute what is by physicians called the first *stadium*, or *period*, and which contains something more than 72 hours, or takes up a small part of the fourth day.

About the fourth day, the fever begins something to abate, and immediately after the eruption follows. It appears like small red spots or pimples, resembling pin-heads ; at first they break out in the face, on the upper lip, on the sides of the nose, afterwards on the other parts of the face ; then they come out on the breast, arms and hands, and at last on the thighs, legs and feet : but they seldom break out on the belly, as the skin is there very tough ; neither under the feet, as the soles of the feet are thick on those who have walked much, and especially without shoes. These above-mentioned eruptions increase by degrees, grow more elevated and broader, with a white point or summit, and their basis red ; the spaces between the pustules turn likewise red. The whole body seems puffed up, the face begins to swell, but chiefly the eye-lids, so that they with difficulty can be opened : proportionably as the pustules increase and grow elevated, the fever decreases, as does also the vomiting ; both of them disappear as soon as the eruption is completed ; those days are by physicians called the second *stadium*, or *period*, and is of forty-eight hours or two days duration.

spread, that she was affected with the small-pox for the second time, had not I myself, together with several other physicians, seen and known the disease. The same is perhaps the case with all those, who are said to have had the small-pox twice, or several times ; therefore physicians ought not to assert any thing, but what they have seen themselves.

* Nevertheless we have instances of those, who have lost the use of speech, and become paralytic, though they have sooner or later recovered from this. See *Kirkpatrick*, c. i. p. 84.

The third period takes its beginning when all the pustules of the face are broke out, and is finished or at an end when they begin to dry. This period commonly continues till the eighth or ninth day, during which time the pustules begin to ripen and look yellow; that is, they suppurate, or are filled with *pus*, grow elevated and broader, their bases are red and painful; the skin or interstices between the pustules continue reddish, the swelling in the face increases, so that the eye-brows cannot be opened; therefore one is said to be blind till the swelling subsides again. The eyes can then be opened and see as before, which happens on the eleventh day: when the swelling of the face abates, it goes into the hands and fingers, and at last into the feet. In this *stadium* or period, the fever returns again, except it is a very benign sort of small-pox. This second fever is called the *suppurative fever*.

The fourth period begins on the eleventh day, or from the time that the pustules begin to be incrusted or scab, and continues till the scabs are fallen off. The pustules are now drying, scaling and falling off in the same order as they broke out; during this time, it often happens, that a part of the variolous matter or *pus* has not transpired, but is absorbed into the blood, and causes another fever, which physicians commonly call *febris secunda variolarum*, tho', strictly speaking, it is the third fever of the small-pox; but as it sometimes begins, when the former one scarce has gone off, it is no wonder that they are confounded. The disease sometimes is so favourable, that neither the first or the second fever is observable. A true small-pox never is finished under eight days.

This is the run of the disease (*decursus morbi*), when the pocks are benign and regular; but when they are of a malignant kind, they will break out within 72 hours, and not by degrees, but all at once, and in a large quantity; in fine, they likewise come out in the nose, and make a stoppage there, as also in the throat, and cause a great difficulty in swallowing. The eruption of the pustules is not performed in the same manner and order, as above was mentioned of the other sort, but begins as well in
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other places as in the face; they are of a small size in the face, but nevertheless they often run into one another, partly in consequence of their great number, partly by their being situated too close to one another in several places, and therefore broken out in heaps, or in bunches. They do not turn yellow or ripen, and are consequently not filled with *pus*; therefore they cannot grow elevated and pointed, but are flat and depressed in the middle: if we open the one or the other of them on the twelfth day, still only a water is discharged; besides they put on an unusual colour, as green, violet, or black. The skin looks on the eighth or ninth day like parchment; the small-pox is likewise of a bad kind, if it is complicated with a difficult hæmorrhage, or petechial spots, or with pleurisy. The fever which otherwise should cease when the eruption is performed, continues here still. The other suppurative fever does not come on gradually, but all on a sudden, and with violence. The spitting begins already in the second period. The *saliva* becomes more and more tenacious, at last it is suppressed, and may suffocate the patient. I find that Doctor *Schröder* has made some well founded remarks and objections against the common method of dividing the small-pox. See *Gott. Gel. Anz.* 1770, p. 1145. They merit a careful perusal, as does every thing this worthy man has written.

When this disease begins to spread in any place, it is difficult to tell whether it will turn out a severe or gentle kind. It is commonly more favourable at the beginning and at the end of the contagion; but this is not a constant rule, for the one which began at *Stockholm*, in the year 1751, in the harvest, and continued till the summer in 1752, was in the beginning gentle, but the rest of the time it remained malignant: if some other kind of epidemical disease infests the place at the same time, the small-pox will then turn malignant; but when it has continued a long time in any place, it generally changes into a more benign one. The longer this contagion reigned in *Minorca* in the year 1746, the less mortal it was; in short, fewer people died of it at the northern part of this island, where the disease made its appearance last, than in the southern part, where

it began. When it is a long time past since the contagion before infested the place, it will then act more severely; and therefore being conveyed to this above-mentioned island in the year 1742, it was very lethiferous, as it had not appeared there since the year 1725. It has been a commonly received opinion, that when the contagion comes into a house, those would be the worst off, who last get infected; but I have frequently observed the first attacked were worse. Some years ago, six children in one family got the small-pox: the first, otherwise a healthy child, got a very bad and confluent sort; the other, who had the infection from the former, got it very gentle, &c.

We may judge any particular person to get a benign or malign sort of small-pox, either by what already is said, or from the following circumstances: a person has reason to expect a benign sort, if he is middling fat, has a mild blood, soft and white skin, florid complexion in the face, a mild and chearful countenance, the eyes being besides clear, but not fiery. We suspect the patient will have a bad sort, if he be lean, has a dry thick and hard skin, brown or black hair, dark or sunken eyes, and if his voice is hard and sonorous.

If one get affected with the small-pox, when the body is well prepared, the stomach and bowels being well cleansed just a little before, then one may expect to get through the disease more easily, *et è contra*. It likewise is probable to have them gentle if they are caught in the beginning of a slight contagion; but after it has continued six or seven weeks, it may turn out a worse sort. One may expect to have a tolerable kind, when the contagion has been malignant in the beginning, and one does not fall in until after it has continued there for some time.

Those will get a bad kind of small-pox, who live much on meat, either use too nutritious, or too weak a food, or have lived too freely, in respect to eating and drinking, and night-watching, or have had too strong exercise, or if they previously have been enervated by some disease or other. If a woman big with child receive the contagion, she herself, or her

fœtus, or both of them, run the risk of losing their lives; the same is the case, if she becomes infected at her lying-in*.

Tho' a child has had much itching or scabs, it does not get less pocks for all that, but on the contrary has rather more; likewise it will be affected with a greater number of them, if a little before, it has had the miliary fever: if a child before this disease is affected with a quotidian ague, and it gets the small-pox, then the former disease will generally cease.

Those who have soft fibres, have the small-pox more benign than those who have rigid ones; therefore *Englishmen*, who bathe much in cold water, have got severe pocks, and the *Negroes* still more so, as they, besides bathing, anoint themselves with balms, rosins, and similar substances, which obstruct the pores.

Young people go through this disease with more facility than old persons, and the younger they are, the more successful generally is the cure. Nevertheless we have instances of children, who have got a malignant sort of small-pox, and died, tho' they still were not weaned; but the fault may then lay in the nurse, or nursekeeper; for instance, how should the child be preserved, if the nurse at that time eats much meat, is of a bad temper, or is in love; or if she has her menses, sits in a place to swaddle the child exposed to the draught of air, or swaddle it seldom, and that in linen not warmed, tho' it should have wet itself; or if she lies down on the floor, and takes the child by her, &c. If this besides happens at the time of teething, the child can hardly by any means be recovered; if pocks settle in its mouth and throat, or on the lips, it is thereby prevented from sucking. The most favourable age for a patient in the small-pox, is from the fourth year to the fourteenth, and the next favourable one from the 16th to the 25th.

* *Kirkpatrick*, c. i. p. 316. has written down a case, which seems promising to women, that they may happily go through the small-pox, though the eruption should fall in at the same time with their menses.

I have myself observed fat children to be as often favoured with a mild kind as lean ones.

If the pustules being licked, have a salt taste, the child that has them, is commonly expected to die, but not else. It is likewise said, that the disease will be severe, if the hands and feet shiver in the first *stadium*, or period, on their being touched: if those who have fed well, lose much blood just before their falling in, either by wounds or otherwise, they will commonly have a favourable small-pox*.

It is no good sign if a looseness comes on, just at the time of eruption, and continues still some days during the breaking out of the pustules. If the pocks itch immediately after their coming out, they will not be mild. When the pain in the loins, and the vomiting is gentle, no very offensive smell comes from the mouth, the nose not obstructed, and the throat clean, the small-pox will then be benign, *et e contra*.

Hæmorrhages of the lungs, and of the *anus*, are threatening signs; but the blood being voided along with the urine, not one patient among a thousand will recover. In the small-pox, attended with petechial spots, three sick are sometimes carried off out of four. A confluent small-pox kills sometimes every fourth or fifth of those thus affected.

We fear a bad event if the pustules in the face are flat, and have a depression in the middle, together with a black-spot, and if their basis either be dark red or pale, and indolent in the third period; not round and hard to the touch, but soft, as also to the appearance, as if they were wrinkled or empty. Neither can we hope for any good success, if the

* Dr. Fuller relates, that a student at Oxford got the small-pox, attended with an hideous pain in the head and loins, as also a *delirium*; but was relieved from all these by a violent hæmorrhage. A child seven years old, lost a great deal of blood by its stools, a little before the eruption of the pustules, which turned out a very mild sort, though the contagion was at that time severe. This Mr. V. Haller tells in *Opusc. prin. iii. p. 352.* Kirkpatrick, c. i. p. 98.

patient frequently makes water, and but very little at a time: if the urine then looks pale, *delirium* and convulsions are imminent, unless the patient has lately been blistered with a plaister of cantharides.

A diarrhœa in the three first periods does no good, but is often of service in the fourth period; but if that which is carried off looks purulent, or is mixed with blood, or is black, the belly being distended and swelled with some pain, then a gangrene has already taken place in the bowels: it is bad if the suppurative fever does not come on by degrees, but all at once, and with a hard pulse, pain in the head and eyes, which are red for want of sleep (*agrypnia*), and much uneasiness: if we then observe a hard pulsation in the arteries on the neck, a *delirium* will follow; but death itself is generally the consequence, when the pulse at the wrist of the hand is low at the time the above-mentioned blood vessels are beating hard.

If not only the whole face, but the eye-brows and the lips swell, it is a bad sign; but the patient will very soon die, if the tumour or swelling of the face withdraws hastily, and does not immediately go to the hands; if the spitting ceases, the skin which is between the pustules and their bases turns pale, he likewise being short of breath, his voice altered, with a peculiar hoarseness, and if he is also observed to be forgetful.

When he has many pustules in his throat, what he drinks returns through the nose. This is the cause of children being so much against drinking during the small-pox, and is in that respect chiefly dangerous, as they cannot take the medicines, though in this disease, unless we drink plentifully, death ensues.

A severe cold coming on while the disease is still in its third period, will easily suppress the spitting in a severe small-pox; many are saved by getting large boils, provided they are observed and opened in time.

Favourable

*Favourable Signs of the
Small-pox.*

1. When one gets the small-pox at the beginning or the end of its contagion.

2. When the contagion is benign.

3. When it is but lately since the contagion of the small-pox appeared before in that place, where one now is affected with it.

4. During the spring or autumn.

5. When the body is well prepared, and the stomach and bowels well cleansed.

6. When we are otherwise healthy, and of a serene temper, and the body in no way overloaded.

7. When no other epidemical disease is spread in the neighbourhood.

*Unfavourable Signs of the
Small-pox.*

1. When the contagion of small-pox has already spread much.

2. When the contagion is malignant.

3. When the contagion has not appeared there for a long time before.

4. During a warm summer, or a severe winter.

5. When the body is not well prepared, and the stomach and bowels not well cleansed.

6. When the fluids are in a bad state, one has the milliary fever, scab, boils, and worms, or is emaciated by some disease before, as sorrow, night-watching, much care, or overloaded with strong liquors, and by improper food.

7. When other bad contagious distempers infect the place, such as the petechial fever, milliary fever, pleurisy, and peripneumony.

8. When

*Favourable Signs of the
Small-pox.*

8. When one is not too fat, has a soft and white skin, lively complexion, a mild and chearful look, bright but not fiery eyes.

9. Above four years of age, and past the age of a tender infant.

10. When one is of a family, who commonly have had the small-pox mildly.

11. When a woman is not pregnant.

12. If she has been well the first three days.

13. When one is between the fourth and the fourteenth year of age.

14. A middling quantity of blood, or discharge of that which was superfluous, either by hæmorrhage from the nose or otherwise.

*Unfavourable Signs of the
Small-pox.*

8. When one is lean, has a rough skin, which is thick, hard, or is of a brown complexion, a heavy look, the eyes being dark and deep, down in their *orbita*, the white part of them reddish, black hair, harsh voice.

9. Not yet four years old.

10. When one is born of a family, the greater number of who have been affected with a malignant kind.

11. When a woman is big with child, or brought to bed.

12. If she has been rather indisposed the usual time.

13. When one is in the fourteenth, fifteenth, or the sixteenth year.

14. Blood in too great a quantity, or too rich, or too emaciated.

15. When

*Favourable Signs of the
Small-pox.*

15. When one has not been very fond of meat.

16. In the beginning of the illness has used proper remedies, been well taken care of, and drank freely.

17. The bed place in a large room, which is moderately warm, and free from any draught of air.

18. In the first period, the heat, the headach, and thirst but moderate.

19. In the mentioned period, either has no vomiting at all, or a very gentle one; feels no pain in the *abdomen*, nor too great looseness at the time of eruption.

20. When the patient is but a little or not at all delirious, has a regular sleep, and the uneasiness is moderate.

*Unfavourable Signs of the
Small-pox.*

15. When one has lived much on animal food.

16. Neglected, and ill nursed in the first periods of the disease, and drank but little; for one must drink much, or else we die of the small-pox.

17. Sleeping in a narrow place, where one is exposed to the draught of air, to a great heat, or to much cold.

18. When in the first period one is affected with much heat, thirst and profuse sweat, likewise with severe pain in the head and back, also a shivering in the hands and feet, upon their being touched.

19. Has a violent vomiting, with a pain in the *abdomen*, and too great a looseness at the breaking out of the pustules.

20. Has a severe *delirium*, which is of long duration; too much sleep or restlessness, much uneasiness, frequently changing his position in the bed.

21. Slight

*Favourable Signs of the
Small-pox.*

21. Slight startings or convulsions a little before the eruption of the pocks.

22. Moderate bleedings at the nose.

23. When the small-pox do not break out sooner than after 72 hours or three days, and then by degrees; first in the face, afterwards on the breast, arms, hands, legs, feet. Are few in number, especially in the face, so that the pustules are pretty distant from each other.

24. When but few pustules sit on the nose, and none in the inside of it, or in the throat,

25. When the fever goes away after the eruption is performed.

26. They grow elevated and pointed, are round and large, have the usual colour, white point, red basis,

*Unfavourable Signs of the
Small-pox.*

21. A stinking smell from his mouth.

22. Too great a loss of blood from the lungs, by the stools, but chiefly by the urine.

23. When the eruption is performed within 72 hours, suddenly without any order, and the pustules are in great number, especially in the face, so that they grow confluent; and that they itch immediately after the eruption.

24. Too great a number both in the inside and outside of the nose, and in the throat, so that the patient is obliged to breathe through the mouth, and has a difficulty of swallowing.

25. The fever still continues, after the pustules have broken out.

26. When they are small, oblong, or angulated, or stand close upon one another, do not grow ele-

*Favourable Signs of the
Small pox.*

basis, and the skin red in the interstices of each pustule.

27. None, or but a slight fever in the third period, good rest and easy breathing.

28. If in the third period the pustules turn yellow and ripen, are distended, hard to the touch, and painful, that the body feels sensible.

29. And no spitting in this period; or in case it comes on, it is but thin, easy and continued.

30. When the swelling of the face is but little, or equally spread all over, so that even the eye-brows cannot be opened.

*Unfavourable Signs of the
Small-pox.*

elevated and pointed, but depressed in the middle, together with a black spot, and the basis of a dark red or pale, as also a pale skin in the interspaces of the pocks, get an unusual colour, as green, violet, or black.

27. A suppurative fever, which comes on not by degrees, but on a sudden, and attended with a headache, restlessness, red eyes, continually changing position in the bed, a *delirium* and asthma.

28. If they do not ripen soon, and turn yellow, but appear as if they were empty and wrinkled, are soft on feeling them, and not painful.

29. Strong salivation from the beginning of the eruption; that which is hawked up is viscid, and done with difficulty, or sometimes stopped at once.

30. Many pustules without swelling in the face, or only the eye-lids, and the lips tumid.

31. When

*Favourable Signs of the
Small-pox.*

31. When the swelling of the face gives way on the eleventh day, and goes to the arms, hands, and fingers, and at last to the legs and feet.

32. Mild weather in the third and fourth period.

33. If the pustules easily dry in the same order as they broke out.

34. When one has some stools during the confluent kind, or in an otherwise bad small-pox, likewise some looseness in the 4th period, and finding relief after each stool.

*Unfavourable Signs of the
Small-pox.*

31. Or a large tumour comes on, and suddenly subsides without immediately taking its way, or going into the arms, hands, and fingers, and at last to the legs and feet.

32. Severe cold in the third and fourth period, by which the spitting diminishes.

33. If they will not dry, or do it but slowly, and get new crusts for the second and third time, since the former have fallen off.

34. When one gets no stools in the fourth period, or too strong a flux attended with pains, without finding ease, so that the stools look nasty and purulent, and are mixed with blood; the stomach is distended and tumid, with a sense of pain: for the gangrene is then in the bowels; the patient seldom voids his urine, and but little at a time. If the urine is made frequently, but little and of a pale colour, then a *delirium* and convulsions will ensue, unless this arises from his
being

*Favourable Signs of the
Small-pox.**Unfavourable Signs of the
Small-pox.*

being blistered with cantharides. A *delirium* is imminent when the arteries on the temples and neck are beating quickly: if the pulse at the joint of the hand is nevertheless weak at that time, then death will follow.

35. No boils.

35. Boils in the fourth period, which have been neglected, so that they are not ripened and opened.

36. The patient swallows easily in the fourth period.

36. If he has at this time a difficulty of swallowing, a peculiar hoarseness, and with a hollow voice.

37. Clean tongue.

37. A black tongue, thrush, desire of sucking of the cloth, which is sprinkled with wine, or any scented water.

38. No pain in the intestines.

38. Pains in the bowels.

39. When nature obeys the remedies.

39. When nature does not yield to the remedies, and they have no more effect, the water is voided without the knowledge of the patient, and the same is the case in respect to his stools: he gets hiccup, the sweat comes out in

*Favourable Signs of the
Small-pox.*

*Unfavourable Signs of the
Small-pox.*

drops, which grow violent
and cold: then he gets
convulsions and at last dies.

The First Period.

When any one catches the small pox he ought to begin immediately to take remedies; what is used the three first days is the most necessary part of the whole cure; if that be neglected, and the small pox are malignant, the physician can in such case promise no favorable event. No disease requires so much nicety and carefulness, as this; a cold breath of wind, a cold napkin, or plate, may cause the pustules to subside or re-enter the body; a cold drink, or soured whey, will sometimes suppress the spitting. If one does not continually prevent the patient from scratching himself, he may be hurt and deformed for the rest of his life-time; if one during the time that the pocks are scabbing does not continually take notice and care of the patient's eyes, his sight may be endangered also.

The small pox would easily be cured, provided we had some antidotes against the variolous matter, which could suffocate or destroy the poison in its first beginning; till any such antidote is discovered, or the inoculation of small-pox is universally received, we shall be obliged to follow the disease through all its stadia or periods; and must in each of them endeavour to relieve the patient to the utmost of our power. Before I undertake to describe the cure itself, it will be necessary to mention some circumstances, on which the happy event of the disease may in a great measure depend.

1. As to the room in which the patient lies, it would be best to have it large, middlingly light, neither too warm nor too cold, but free from any draught of air. If the patient has a severe fever, the room ought to be kept cooler; and if the fever be too slight, the

room should be something warmer. The temperature is generally as it ought to be when the *Swedish* thermometer stands 13 or 14 degrees above the freezing point *, or when one scarce feels any chilliness in the fingers on shaking the hand hastily backwards and forwards. It is likewise of service to hang a curtain before the door ; partly to prevent the draught of air, and partly that one may let in fresh air : without this a draught of wind will incommode the patient. One ought also frequently to strew young and fresh branches of *Scotch* fir-tree in the room, and which antecedently have been chopped and sprinkled with some small beer or vinegar, or with a little rhenish wine, in case the patient is weak. The sick will suffer in his eyes if the room smoaks, but he will find immediate relief by some vinegar evaporated over the fire. We ought not to place more than one or at the utmost two patients in the same room, unless we cannot possibly avoid it. We know what a stench arises from a single patient, especially on the 8th or 9th day, and that, from several patients in the same room, the air grows infected to such a degree that even the healthy suffer by it, and the sick still more so. In that case, it is not sufficient to use the *fir* or *spruce*, as above was said, but one ought even then frequently to put some vinegar over a fire-pan in order to evaporate in the room. The bed ought to be so placed that one can get to the patient on both sides. It should especially not be put near a stone-wall ; for it is observed that the pocks ripen and dry much better on that side, than on that which is towards the room itself. Nor ought the bed to stand so that the light falls in the eyes of the patient ; he may lay on his usual bed cloaths, but a matrafs is in general the best. He should use a thinner covering if it be in the summer, and a thicker one if it be in winter ; his feet ought to be kept something warmer than the other

* The *Swedish* thermometer is filled with quicksilver, and the distance betwixt the boiling and freezing points is divided into 100 equal parts or degrees, which one must begin to count from the freezing point, both ways, upwards and downwards.

parts of his body. We should by all means shift the sick with clean linen, especially in the fourth stadium, provided it is carefully and cautiously done. There is no necessity for any persons wearing it before, it will be quite sufficient to have it well dried by a smoothing iron; or if his linen happens to adhere to any of the pustules during the disease, we easily loosen it by applying to that place a sponge which has been dipped in warm milk.

Nobody ought to be admitted into the patient's chamber who is not wanted to the nurse-keeping, and the less we talk with him the better it is. As for the food, we observe in general, that a sick person ought to eat but a little at a time, and never to take any solid food at those hours of the day when the fever is severest. He does not want much nourishment in the favourable kind of small-pox, because the illness will be short. But in the severer sort he has occasion for more, as the disease will be of long duration; all sorts of water-gruels and groats are convenient, as also a cherry-soup. Those who have a thin blood and little fever, may eat veal and chicken-broths boiled with greens, and afterwards strained: or panadas prepared for instance as follows. Take two ounces of biscuit, boil them in a pint and a half of water till they are well dissolved, then add two or three spoonfuls of wine, and two drachms of sugar, beating it together with the yolk of an egg on taking the pan from the fire. Those on whom the pustules will not rise and fill well, may be allowed some wine in their soups, or they may eat a slice of toasted bread soaked in water, strewed with some sugar, and sprinkled with a little rhenish wine. If the patient has too great a looseness, give him this toast strewed with the yellow part of orange peel, a little nutmeg and cinnamon. When the fever is too strong, we pour into his soup a little vinegar, or instead of that, some juice of Berbery (*succus berberum*) in case he has too great a looseness at that time. The fever is in general too high with us in Sweden during the disease, and therefore it is not advisable to give the patients either broths, eggs, or wine.

It is indispensably necessary to drink plentifully during the small-pox, and chiefly in the first period. The

patient ought to drink frequently, and but little at a time. The nurse or waiter is not to stand till the sick asks him for the drink; for he will not feel any thirst if he should be a little delirious. He does not chuse to drink if he has *pustules* in the throat, because it causes pains in swallowing; nor need we ask the patient if he chuses to drink, but we ought to carry the tea-cup or glass to his mouth as often as we judge it necessary, during the time he is awake; a barley-water (*aqua hor-deata*,) mixed with a fourth part of milk, is a very salutary drink in the small-pox. Whey mixed with an equal portion of boiled water is very palatable, and quenches the thirst: fresh and strained butter-milk is likewise very good; also tea with a little milk in it, or tea with citron marmalade. One may likewise prepare a very palatable and refreshing drink of preserved red currants, on pouring on them boiling hot water, and after it is a little cooled we may add a little rhenish wine to it. Preserved Norlandic berries, in the same manner prepared, give also a very pleasant drink, which especially is applicable on the 4th, 5th and 6th day. Barley ptisans, in which has been dissolved some gelly, will make a cooling drink likewise; as also panada with the juice of limes and old hock; but nothing is so refreshing, and quenches the thirst sooner, than a well prepared drink of cranberries, which therefore ought to be had in the shops.

The five first sorts of these drinks are chiefly the most useful in the small-pox, especially when the fever is too strong, and ought to be lowered; the latter are the most serviceable when the fever ought to be supported or increased, therefore it should be modified accordingly with wine. Those who are affected with pustules in the throat cannot bear any acidulated food or drink, much less any thing sour; the throat grows thereby worse and hoarser.

As for the cure itself in the first period, we must endeavour to effect it, 1. By taking care that the fever be moderate. 2. That the small-pox do not break out till towards or on the fourth day. 3. That as few pustules as possible may break out in the face, nose and throat, and none in the eyes. 4. To prevent dangerous accidents,

If the fever be too strong we abate it : 1. By bleeding, which ought to be performed, *a.*) If the patient has too much blood ; if we know him to be plethoric ; if he has for a long time had a good appetite, together with a sound sleep and little exercise ; if he has used nourishing food, beer and wine ; if he has not been weakened by any evacuation ; if his pulse is high and strong, the veins distended, and the face red, but especially the lips, gums, the inside of the nose, eyelids, the corners and the whites of the eye : *b.*) If the patient be young, of a strong complexion, and has been used to have inflammatory fevers : *c.*) If at this time many in the neighbourhood are affected with inflammatory fevers, or such in which bleeding has been found beneficial : *d.*) If severe cold or dryness, or north wind has been prevalent : *e.*) If the fever is very violent, attended with head-ach, pain in the loins and the whole body, an anxiety, signs of imminent delirium, swelling in the throat or some inflammation. The fever is violent if the pulse be quick, hard and strong ; if a strong pulsation is felt on the temples, the patient being very hot, and unwilling to lie down ; if the breath be short and laborious, the urine red, the tongue dry, with a great thirst*. The signs of an imminent delirium are a strong throbbing of the arteries on the temples, a severe head-ach, restlessness, and the white of the eyes turned red and inflamed. When the patient is found under such circumstances, he ought without hesitation to be bled : and that not once but several times till the fever is abated to a moderate

* Nevertheless the bleeding ought not to be immoderate, in order that the same thing may not arise from thence, as happened to the *Italian* physicians, who on inoculating a child 11 years of age, drew off so much blood during the preparation, as also after the fever came on, that the fever abated, and only a single pustule broke out in the child's face : but as soon as the child had recovered a little strength after this wasting of blood, the variolous fever returned, and a great number of pocks broke out ; the cure proved however successful. See *Abhandl. de Naturforsch. Gesellsch in Zurich*, VOL. III. p. 175.

or due height. If he is too averse to bleeding, or is too fat, so that it cannot be performed without difficulty, we may then apply the cupping glass in the nape of the neck, and on the calf of the leg, and thereby nearly gain the same point, and besides that, a great number of pustules are by that means derived from the face and throat. We ought not to bleed a patient who labours under contrary circumstances; therefore no blood ought to be drawn from one that has had a weak and pale countenance, or has a weak and low pulse, and the urine colourless, the thirst and pains but little, and the drowsiness great; or if he is affected with pains in the stomach, faintings, and a dejected mind. The small-pox that such a person gets, will neither rise nor ripen, therefore he has rather occasion for things that will raise his pulse and increase the fever, than such as make them sink lower.

Children are commonly weak and sooner lose their strength; grow also in proportion a great deal; consequently a great part of their food is employed to the increase of their body. For that reason I would rather not recommend any bleeding for them, unless there be the more obvious necessity for it, and that we apprehend convulsions; especially as nature of her own accord causes commonly a bleeding at the nose.

2. With remedies which well cleanse the stomach and bowels*. As soon as the bleeding is performed, a clyster ought to be injected; that may be prepared of tepid water, a little oil of olives, honey and saltpe-tre. Such an injection should be repeated every day, till near the time we suppose the pustules will break out, unless on a day we have thought proper to order a purge. That is generally necessary, chiefly in case the patient before has had a good appetite, used to good cheer, and but little evacuation. Chiefly if the stomach at the same time be full and distended, rumbling wind felt in the belly, and the pains in the loins are violent†: a proper purge for a child is the rhubarb elixir

* See *V. Haller's Elem. Physiol.* vii. p. 179.

† That a concurring diarrhoea can retard the eruption of the small-pox, may be seen from an instance related in the above.

elixir prepared with wine (*Tinctura Rhei dulcis Edinb.* or *elixir salutis Edinb.*) made with wine. The dose is nearly a spoonful for a child three years of age; or we may take half a drachm of rhubarb cut in fine pieces, a few grains of cochineal, and four raisins likewise cut; on this we pour three tea-cups full of boiling water in a tea-pot, which is to be put on hot ashes during the night, filtered and mixed with a tea-spoonful of cinnamon water, of this the child must drink two tea-cups full immediately, and the remainder an hour after. But these purges are too slow in their operation; and it is of the greatest importance to abate the fever to a moderate and gentle degree in the first period; for scarce one patient dies, of those who then have the fever moderate. The above remedies I have proposed are good, but not always sufficient, especially if the contagion of the small-pox is connected with a putrid fever. Nothing moderates the violence of the fever so effectually as purges, which operate quickly and freely, and are given before the eruption. The *English* have first taught us this, and our own experience has confirmed their assertion. When such a remedy has quickly made its operation, and with an evacuation to some purpose, we have found that head-ach, delirium, swelled and red face, sleepiness or drowsiness nearly resembling lethargy, and all bad symptoms at once have been carried away; and that in the small-pox both from natural infection and by the incision. If the fever has not abated sufficiently after the first dose, we have given another if the time allowed it. Some of my friends among the physicians in *Stockholm*, have also by letters to me confirmed the same: the purge they had prescribed, was commonly a powder prepared of *cremor tartari* three drachms, root of jalap half a drachm, and *tartarus emeticus* one, or one and a half,

above-mentioned Transactions of *Zurich*, Vol. III. p. 174. When the diarrhœa had ceased, and the child recovered strength again, the variolous fever returned, the pustules broke out, and the event was prosperous. This happened by an inoculation, and may likewise happen by a natural infection.

or two grains, according to the age of the child, and other circumstances. This they divided into six parts, and gave one part every hour till it began to operate; professor *Bergius* ordered, with the same success, a powder made of *tartarus emeticus* three grains, and *cremor tartari* three drachms, well rubbed together, and divided in eight parts, to be taken as the former. We have learned from the *French* physicians, that *tartarus emeticus* does not occasion a vomiting, but purges if we mix it with some salt, and rub it very fine. Emetics are seldom wanted in the small-pox *, for the sick puke enough without them. And in order to facilitate the vomiting, we give them to drink some warm water after each reaching, till it is at last thrown up again untinged, and we may then with reason think the stomach cleansed.

3. With cooling food and drink, and such as above was mentioned. 4. With cooling remedies. For instance, we may prepare small powders of six grains of purified nitre, and 30 grains of *morfulæ citri*, and give one of them every hour, or hour and a half; or *cremor tartari* 10 grains, mixed with an equal portion of sugar. If the child has rather a looseness, we must order purified *sal ammoniacum* instead of nitre, but the powder should then be taken in wafers, in order to avoid the taste. One ought to be cautious in regard to the nitrous medicines, and not to use them too freely, especially with weak and sensible children, who will be injured by them in their stomach. In case we should prefer a draught, it may be prepared, for instance, of two quarts of boiled water, which afterwards has been cooled, mixing with it three ounces of good vinegar, three ounces of syrup of raspberries, and as much

* They are however required, when nature of her own accord does not excite vomiting, although the child should be troubled with slime: if it has a snoring in the breast, has a pale and sunken countenance, and is subject to convulsions, also when the spots of the small-pox cannot break out and rise in consequence of this weakness and dullness, but seem as if they were confined under the skin, and the child lies as in a lethargy.

of pearl-barley soup; this we give to drink freely and frequently, a tea-cup full at a time.

5. By less heat in the room. 6. By giving him a thinner covering: and 7. By often changing his bed, so that the patient is carried from one bed to another, and does not return to his former one before the bed cloaths have had time to cool. 8. By prevailing on him to get out of his bed as much as possible, which will prove very salutary to him.

If the fever should be too slight, which is however seldom the case during this period, bleeding ought then to be omitted, but stools must be procured for all that, as is above observed. We increase the fever; 1. By heating the chamber more. 2. By a thicker and warmer covering. 3. By food and drink, with a little wine to it; a whey of wine will be very much to the purpose in this case. 4. By a paste or poultice made of acrid mustard-seeds with vinegar, and applied to the soles of the feet, or on each calf of the leg; this must be removed as soon as the skin grows red and spotted.

We have no method, with any safety, to prevent the breaking out of the pustules till on the fourth day, but in abstaining from the use of expellent remedies on the first three days; for instance, as musk, camphire, flowers of sulphur, &c. and taking care that the room be kept rather cool. We likewise prevail on the patient to keep out of bed, or at least not to lie under the cloaths.

We endeavour to secure the face, eyes, nose and throat from being overrun with pocks; 1. By bleeding or applying leeches, when circumstances will allow the use of these remedies, as has been above observed. 2. By scratching the skin in several places without piercing it; this may be effected on the arms and legs with a pin or the point of a lancet; see more of this in the next Chapter on Inoculation. When the extremities and the surface of the body are in this manner irritated, the blood will flow in a greater quantity to those parts: and the greater number of pustules and suppuration we are able to raise on the arms and legs, the more are the face, eyes, nose and neck secured, by means of the revulsion they cause; therefore it will answer the same purpose, 3. to apply
sinapisms

sinapisms on the soles of the feet, or on the calf of the legs, or on the arms; this will be proved by the instance I am going to give in the Chapter of Inoculation. 4. With the same intention we foment the last mentioned places with flannels or linen soaked in a warm decoction of carrots and milk, afterwards squeezed and applied, taking care to change them as often as they begin to cool. We find how seldom the pocks break out on the soles of the feet and on the belly, because the skin in the first place is generally hard, and in the latter very rough. For the same reason we, 5. ought to keep the under parts of the body warmer than the upper; and 6. we should shave the head, by which means it is kept cooler and perspires better. We may as well do this at first, as the hair otherwise sticks fast together with the pustules, so that it will be necessary to cut it off sooner or later.

We endeavour besides to guard the eyes, by means of a linen compress, on which some camphire has been rubbed, fastening it to the night cap, so that it hangs loosely over and covers the eyes.

As the scars do not occasion any deformity of the face, provided the nose is not hurt, therefore one of our principal endeavours should be to preserve that part. In order to effect this, apply on it small linen rags soaked with a little camphire spirit, or *balsamum embryonum*; but one must however allow the strongest part of this first to perspire away; *emplastrum de ranis cum mercurio* will answer the same purpose, if it is thinly spread on a piece of linen, and applied to the nose*. In case a number of pustules have broken out in the nostrils, and cause the patient to breathe through the open mouth, it is of service to put small linen rolls in the nose that have been soaked in milk, taking care that the broader end of them are always dry.

It is a vulgar custom with us to stitch black wool to a bandage, and besmearing it with *theriaca*, tie it

* I find that Dr. *Sulzer* has been pleased to follow this my advice; and that it has proved successful. So that the child got no pustules on the nose. See the *Transact. of Zurich*, vol. III. p. 53.

round the neck in order to prevent the pustules settling in the throat. This seems to do neither good nor harm; it will be more beneficial to apply leeches to the nape of the neck of the patient, and persuade him to gargle himself freely and frequently with a water prepared as follows; take a drachm of camphire, pour on it a few drops of (*liquor anodynus mineralis Hoffmanni*) Dr. Hoffman's mineral anodine drops, and rub it in a marble mortar; add to this four drachms of sugar, and rub it again, so that all be well mixed; pour gradually on this two pints of hot water, and strain it directly. This to be preserved in a bottle well corked: one may use of this half a tea-cup full at a time; at each time we add to it a few drops of the above-mentioned *liquor anod. min.* In case the pustules are already broke out in the throat, our province must then be to bring them soon to maturity and desquamation, which can best be obtained by a frequent gargling with warm milk or thin oat-gruel soup.

The troublesome accidents or symptoms which usually attend in the first period, are vomiting, delirium, looseness, hæmorrhage of the nose, and convulsions. As the vomiting cleanses the stomach, it should be promoted with milk-warm water; if it is too violent we must apply to the stomach bags with mint, (*mentha crispâ*) with some saffron put to it, or we boil these bags in rhenish wine, and squeezing them well out, apply them moderately heated to the stomach; or we may boil a poultice of leavened bread and mint, together with vinegar or rhenish wine, and putting it into a linen bag, apply it to the stomach; the vomiting ceases of its own accord as soon the eruption is quite compleat. A delirium is not dangerous in the first period, as it is owing only to a rapid circulation of the blood; we oppose to it the same remedies by which the fever was to be moderated. A clister injected, and leeches applied in the nape of the neck, often prove sufficient. In children it generally ceases by a bleeding of the nose, which commonly is portended by an itching or tickling of the nose, or by an excruciating or shooting pain in either of the sides, which comes and goes off hastily.

Too great a looseness may be prevented, by giving rhubarb in the very beginning of the disease, in the

manner as above was observed. A diarrhœa is not hurtful the first days ; but it ought to be stopped in case it should continue till the time of eruption ; we may stop it by a convenient diet, and an *emulsio arabica* prepared of three drachms of *gummi arabicum* boiled in two pints of water, and afterwards mixed with an ounce of sweet almonds blanched and pounded ; likewise by a clyster prepared of milk, a little *theriaca* and white starch ; or of lime water, a little *diascordium* and *balsamus Locatelli* beaten together with the yolk of an egg. Tender infants are affected with some looseness during the whole course of the severer kind of small-pox, and this looseness proves generally to their advantage.

The same is the case with the bleeding of the nose, when it is moderate* : head-ach and delirium are thereby relieved, and the fever itself diminished. The patient ought to bleed but in a tea-cup, plate, or vessel, in order that one may judge of the quantity, whether it be moderate or not ; if it should be too copious, which we likewise judge from a greater lowering or sinking of the pulse, we stop it by *fungus* cut in form of a long cone, and put in the nose : or we beat the white of an egg and alum together, spread it on a tent, and putting it up into the nose, leave it there till it falls out of its own accord.

Convulsions commonly portend a favourable small-pox ; when they come on, it happens either on the first night of the fever, or more commonly a little before the eruption ; we prevent them by bleeding ; but may relieve them by a clyster of milk, oil, and sugar ; and by giving the child as soon as it is able to swallow, a powder of two or three grains of musk previously rubbed with 10 or 12 grains of sugar : a gentle vomit will have a more certain effect on this occasion †.

The

* See *V. Haller's Elem. Physiol.* V. p. 150.

† A child eight months of age was inoculated in the year 1770, in the spring, and got convulsions ; had a hollow snoring in the breast, its hue was pale, the body coolish, and its pulse quick. The child could not recover its natural warmth

The Second Period.

During these days, our efforts should be to promote a good eruption of the pustules, that they rise full, and become pointed; there is however no occasion for any expellent remedies, if we find that the pustules break out gradually, grow elevated and broader, that the pulse is moderately high and strong, and not too quick, but beats for instance something more than 120 strokes in a minute in a child, and about 96 strokes in a full grown person; all that is then requisite for the patient, is to let him drink freely, in order that his blood may be supplied with a sufficiency to fill the pustules.

But in case the pustules will not break out freely, and still less rise and fill, the vomiting continues, the pulse is low, weak, and quick at the same time; then we ought to give our patient one or two spoonfuls of wine or mead, or we let him drink a whey of wine. Now it is likewise proper to give him small powders prepared of a few grains of camphire, one grain of extract of saffron, and 30 grains of preserved citron peel (*morsulæ citri*): or a camphire emulsion made of half a drachm of camphire, rubbed with six almonds blanched and pounded, and then mixed with half a pint of *aqua florum ulmariae*, and two drachms of sugar; a tea-cup full of this is the dose at a time; or we may prescribe powders of musk and sugar as above-mentioned, ordering some tea of ulmaria (*flores ulmariae*) to be drank after it; but, as we have observed, this is seldom wanted. When I have been assured of the child's being well and properly nursed, the steam of warm milk has been directed to the face; by which means I have found the pustules begin to rise immediately: I have

warmth or usual colour in the face, before it got a few pukings by *ipecacuanha*, mixed with *oxymel scilliticum*; this at first evacuated a quantity of slime, and afterwards purged gently. Perhaps the *tartarus emeticus* would be more proper on such occasions, as it afterwards gives the humors a greater tendency towards the skin, than the *ipecacuanha*.

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sometimes applied sinapisms to the calfs of the legs with great advantage.

All this succeeds sometimes exceedingly well; the pustules break out, and they rise likewise; but it often happens that they of a sudden subside again; turning either pale, or containing a matter which does not grow yellow or ripen, but turns black and stinking, surrounded with petechial spots; therefore as soon as I find that the pustules are backward and slow in their breaking out and rising during this period, I immediately begin to give the jesuits bark, especially if I know that the present contagion of the small-pox has been malignant, and that the patient is of a weak constitution; and I continue this remedy during the whole course of the disease, giving it oftener, or in greater doses, when the pulse is weak, and the red colour round the pustules is less; but in case the pulse is quick, and the above-mentioned redness greater, the doses of the bark are lessened accordingly, or given at longer intervals. This method has been followed by many *Swedish* physicians, and attended with great success; and has been before us used by the *English* physicians, *Morton*, *Mead*, *Monro*, *Wall*, *Huxham* and others: nevertheless, it is a difficult task to make the bark palatable, so that children can take it. How to gain this point, shall be afterwards shewn in the Chapter on the Ague; it would be very easy to mix wet bark up in wafers, provided children could swallow such lumps; the taste of bark will likewise be made tolerable, by beating it with bitter almonds; powder of bark may also be tolerably well swallowed in the common almond milk; the bark mixed with the *bacc. Norlandic.* and syrup of the same may be made into a palatable electuary, which even for the sake of the *Norlandic* berries alone, is now very proper and salutary. The following composition is also very good: take the confectiion of the lemon peel one ounce and a half, and an equal portion of orange peels; beat them well together in a mortar, adding gradually during the time *aqua ulmaricæ* half a pint, and *aqua aurantiorum* a gill; this is to be strained and mixed with three drachms of powdered bark, and *syrupus aurantiorum* or *syrupus baccarum Norlandic.* about two ounces; or we
may

may make a tolerably palatable drink of two drachms of extract of bark, dissolved in 10 ounces of *aqua cerasorum*, adding to this three ounces of *syrupus citri e toto*; the dose is a spoonful at a time.

As the bark is a very salutary and blessed remedy, it is of importance always to try before hand, whether it be genuine or adulterated. This may be done in the following manner: boil a little powder of bark in water, and pour it directly into a glass bottle; if the decoction appear of a red colour while it is still warm, and pale after it has cooled, one may depend on its goodness, otherwise not.

It happens likewise frequently that the pocks cannot break out, on account of the fever's being too violent and severe. Those who are of a strong constitution, have firm fibres, and thick blood, the *cruor* in it being prevalent; are subject to this difficulty; we ought then to use those remedies which diminish the fever, and which are the same as above enumerated at No. 1, 2, 3, 4, &c. at the same time softening the skin on the arms, hands, feet, and legs with fomentations, as also has been mentioned before; powders of camphire may be likewise now made use of, but prepared of seven grains of nitre, three grains of camphire, and 30 grains of *mosfulæ citri*. If the pain in the loins still continues and is violent, that may also retard the eruption; therefore in that case, one must apply a warm poultice of groats wrapt up in cloths, on the back of the patient, and give him either the *syrupus e meconio* *Edinburg.* or the *Elixir paregor.* *Lond.* and at the same time, one of the above remedies which will promote the eruption; the dose of the elixir for a child, is from five to 20 drops in some syrup, with which it ought to be well mixed.

Should the patient be delirious, although the eruption is tolerably well compleated, we ought immediately to apply the *sinapisms* on the feet, and leeches to the nape of the neck. We find that the lungs are just beginning to inflame, when the patient complains of a load on his breast, hawks up blood, the fever continues, the breathing grows difficult, and is found to be hot when one holds the hand before his nose and

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mouth;

mouth ; in that case he ought immediately to be bled. See more of this in the Chapter on Measles.

In case the sick is affected with a pleurisy, we employ the same remedies, and the side must be fomented with *oleum camphoratum Edinb.* A pain in the side, which comes on, and goes off of a sudden, commonly announces an impendent bleeding of the nose. If too great a looseness, or a true dysentery should concur in this period, we must immediately employ the remedies, as above recommended for the looseness, and at the same time use the powders of camphire, prepared without nitre, but mixed with the eighth or fourth part of a grain of *opium*, according to the age of the patient.

The Third Period.

In this period the pustules begin to stink, itch, and ripen *. What was observed at the beginning of the second period, likewise holds good here : if nature herself is sufficient, she will want no other assistance than plentiful drinking ; but if the pulse be too weak, or too strong, we may use the remedies above recommended, for either raising or lowering it. No suppurative fever will ensue when the small-pox is very favourable ; but if the disease be severe, the sick will towards night grow affected with an uneasiness, and become restless, so that they lie tossing themselves from one side of the bed to the other. In such a case it is customary to give a child a little of the *syrupus e Meconio* ; but it is more adviseable to leave that alone, and rather give it some of the drink, as mentioned at No. 4. or according to the advice of the worthy Dr. Tissot, (in his *Letters to Baron Van Haller*), let the child take the following mixture :

R. *Spir. Vitrioli*, 3 ℥.
Syrupus Violar. 3 iij.
M. Dr. S. Cooling mixture.

* That the *pūs* can burn, is an observation made by V. Haller, *Opusc. min.* iii. p. 356.

The dose is ten drops at a time, taken in a tea-cupful of pearl-barley water, and repeated more or less frequently in a day. Now in order to prevent the patient from scratching himself, it is necessary to tie his hands, and to have a person attending at his bed, streaking over the pustules in his face with a quill continually and gently.

If the small-pox be malignant, then the suppurative fever (*febris suppuratoria variolarum*) will begin with a quick pulse, heat, thirst, uneasiness, and want of sleep*. Sometimes it comes on suddenly, and with such a violence, that before we know any thing about the matter, we find the patient in a severe *delirium*, with a swelled throat, or an inflammation in the breast, or pleurisy. The following are the causes of this fever.

1. The nerves of the skin are irritated partly by means of the swelling in the face and whole body, which causes a tension in the skin, and partly by the formation of the *pus* in the pustules and their distention.

2. The natural and usual perspiration is intercepted by the skin being overrun with pustules. Suppose only one third of the skin to be overrun and crowded with pustules; nevertheless nine ounces of perspirable matter will by that means be retained at least for each day, which will always occasion a fever by its acrimony, unless it is carried off some other ways.

Sometimes it will likewise happen, that the pustules subside; and that a great part of the *pus* is absorbed into the blood, which increases the fever a great deal; but, as that belongs chiefly to the fourth period, it shall be mentioned there.

This fever will prove more severe and dangerous, in proportion as the constitution of the sick is more sensible, and the number of the pustules greater, and malignant, and the blood has been less diluted in the

* Those who have a nice, or subtil smell, are able thereby to know, whether this fever will break out the next day.

first periods with a proper and sufficient drink ; accordingly, it will be of the greatest importance to prevent it, and to procure the patient a good nurse. The first cause of this fever may be diminished, or entirely removed, by copious drinking, and by fomenting the extremities, as I have before prescribed : if the pustules are very painful, we may then give the child a little *syrupus à Meconio*.

The second cause of this fever, we endeavour likewise to remove, partly by copious drinking, for the acrimony is blunted by being diluted ; partly by procuring it another outlet ; for instance, through those pores of the skin, where there are no pustules, and by taking powders of camphire. I have many times observed the sick brought into a sweat at those places * ; and likewise to have had some rest and sleep after each powder, during which time the pustules have risen, and consequently been more filled with a part of this matter ; therefore it is very beneficial, to open at least the largest and most coherent pustules, by means of a pin, lancet, or the scissars, in order to discharge a great part of the corrosive *variolous* matter ; but this must be repeated several times in a day, as they soon grow together again. The matter which runs out at each opening, ought to be wiped off by a fine sponge, dipped in milk-warm water. The perspirable matter may get another issue by a more copious salivation, of which we shall afterwards learn, how it may be promoted ; also by a more copious discharge of urine, which we may encourage by drinking freely, especially if small doses of *spiritus Mindereri* are put into the drink, or we take half a drachm, or a drachm of this spirit in *oxymel scilliticum*, or by the powders of *cremor Tartari*, as before-mentioned. Sometimes this perspirable matter goes off by frequent stools, that often to the advantage of the patient, and which gave occasion to the learned Dr. *Friend* to prescribe purges. They ought

* *B. V. Haller* is perhaps the first, who brought camphire into use in this disease. With how great success he employed this remedy during a malignant contagion, may be read in his *Op. min.* iii. p. 350.

to be given as soon as the greater part of the pustules in the face have begun to dry. We have no other resource than that, in case the salivation ceases, the swelling in the face disappears, without being transferred to the hands and fingers, and the discharge of urine decreases. It is however safest, first, to inject a clyster, (which ought to be done every day, during the whole course of the disease, in case nature of her own accord does not procure stools), and after that has operated, we must attentively observe, whether a low, quick and trembling pulse rises, and is filled: if the uneasiness and the heat decreases, the short and difficult breathing lessens, we may then, in such case, with safety give a gentle purge of *diacassia Edinb.* dissolved in whey; or we may prepare a drink of *manna* and tamarinds, hastily boiled together in water, and being strained, made palatable with a little syrup of raspberries; but we ought not to neglect giving the patient a cordial during the operation. Such a one may be prepared, of cranberry water, four ounces; cherry wine, two ounces; 15 drops of the *liquor anodyn. Hoffm.* and two or three drachms of syrup of raspberries.

If the fever should be too violent, we are obliged likewise to bleed in this period, tho' it will hardly be wanted, provided we drink copiously of the just now mentioned cooling-mixture.

I here repeat what has been said in the second period, that these remedies prove often exceedingly good, but seldom succeed in a very malignant small-pox; therefore I now adhere to the use of bark, and whosoever prescribes it according to the advice I have before given, will find that this remedy often works miracles: and that he will have no occasion for other remedies.

It was mentioned as a favourable sign, when the face continues swelled till the eleventh day; but in consequence of that, the eye-lids will swell and stick together, so that the patients are unable to see during that time. A great number of physicians do not meddle at all with this; but I think it safer to open the eyes once a day, in order that we may see if they suffer in any manner. They may most easily

be opened by being licked with the point of the tongue. If nobody can be persuaded to do this, we may dip a piece of soft linen in milk mixed with water, squeezing it out, and applying it moderately warm to the eye-lids, so long till by the fingers we are able cautiously to divide them.

I promised to say something about the spitting, which is an evacuation indispensably necessary in a malignant small-pox, portending much evil when it flows with difficulty, or ceases too early. Spitting is seldom observed in children, but older persons begin to spit already on the fifth or sixth; nay sometimes on the fourth day, from the first seizure. The sooner it begins, the worse the disease will prove. It flows very easy in the beginning, being then thin, and very copious; but when the tenth and eleventh day comes on, it will grow thick and viscid, is performed with great difficulty, so as to be even suffocating. This is prevented and relieved with a copious and warm drink, by frequent gargling, and injections by syringes: as a gargarism may be used the *decoctum pectorale Lond.* taking a pint of that, and mixing it with one ounce of *acetum scilliticum*, and one ounce of *mel rosarum*; or decoction of carrots, mixt with a little syrup of violets; or one may take *radix altheæ*, (marsh mallow root) two ounces, four figs; boil them with three pints of water, till the half is consumed; or boil bruised flax-seeds, half an ounce, in a pint of water, till two thirds are remaining, that being strained, add a little clarified honey. The same serves also for syringing, which promotes the ripening and scaling of the pustules in the throat; but nothing promotes the spitting better, and relieves the throat, than drinking warm milk with a little sugar to it; sometimes by itself, sometimes mixed with tea, barley water, or oat-gruel.

The patient ought not to lay on his back, neither in this period nor in the following, but turn now on the one, now on the other side, in order to prevent the *saliva* from falling down in the throat; therefore one must likewise put a soft and warm napkin under that cheek he leans on, and shift it as often as it is necessary.

The Fourth Period.

If all has succeeded favourably, and in its order, nothing will be wanted in the fourth period, but good nursing and drink ; especially if the small pox is benign, the spitting and breathing performed easily, the pustules ripen and dry, the swelling which has hitherto been in the face, is transferred to the hands and fingers, and afterwards to the feet, the sleep is likewise good, together with a beginning of appetite.

But if the small-pox is of a malignant kind, a new fever will then arise from the *pus* in the pustules, which is not wholly perspired through the scales, but partly absorbed into the blood ; this fever will likewise arise from the great quantity of foul substance collected in the stomach and bowels, when the patient has been costive during the course of the disease ; therefore that being taken up, and carried into the blood by the lacteal and absorbent vessels in those parts, it must necessarily cause a fever by irritating, and that of the putrid kind. This will not go off till the above-mentioned *pus* is wholly carried out of the body ; nay if it be transferred to the brain, there causing a difficult *delirium*, or a profound sleep ; or to the lungs, there causing a severe asthma, an inevitable death will ensue : if it is transferred to the eyes or ears, the sight or hearing will be lost : it is therefore of great importance to prevent this fever if possible. The bark, together with a strengthening diet, added to those remedies which cleanse the body from the *pus*, are the most effectual for that purpose ; I mean such as will raise the pustules and promote the spitting, together with a copious discharge of urine. Gentle purges are likewise conducive to it, when used with the precautions I advised in the third period. Here it is also of some service to foment the arms, hands, legs, and feet, and to apply a sinapism, in case the pulse is low and weak.

It often happens, that the *pus* is thrown to some place on the surface of the body, there forming a tumour, sometimes attended with pain, but commonly indolent : if this matter gets an issue, and is not

absorbed again, the patient will be then quite cured. We ought therefore not to neglect to look for this: if no tumour is to be seen, we order the patient to cough, inquiring if during the time he some where feels it: if there be found the least sign of swelling, apply on it directly a poultice boiled, of milk, wheat, flour, a baked onion, and a little saffron; as soon as we observe any matter under it, open it with a lancet.

As soon as the pustules dry in the face *, we ought to begin to anoint the crusts in the same order as they are formed, but not earlier. I have always employed a soup of groats for that purpose, with a little sugar in it, and an oil prepared by shaking one ounce of oil of almonds or olives with a drachm of *oleum Tartari*. These two remedies ought to be brushed on the crusts alternatively, so that when the first has been employed once, the other is to be used next.

Sometimes I have used veal-broth, sometimes warm milk, in which a fine sponge has been dipped, in order to streak the face over frequently. Some recommend to anoint the crusts with a quill dipped in a mixture of chalk and cream.

The patient having at last gone through the small-pox, and the crusts scaling; it is highly necessary that he should be purged six or seven times, at the interval of four days between each purging. The *electuarium lenitivum Lond.* may be used for that purpose, about two, three, or four drachms, according to the age of the child. For, if this be neglected, the child may easily get affected with weak lungs, bad eyes, scabs or boils. It is not probable, that those who have once had the true small-pox, can receive the infection a second time †. I have often heard it mentioned, but as yet

* Some pretend, that the scars of the small-pox on the *Negroes* are white; they are something paler in the beginning, but soon grow black again: the same is the case with the scar after inoculation, which I have seen in two of them.

† The disease called *Framboesia Guineensis*, likewise affects a person no more than once. See *Sauvages Nosol.* iii, ii. p. 425.

never found any instance of it well confirmed, nor, to my knowledge, any other experienced physician in this kingdom. One may indeed get the chrystalline, or watery kind, but never the true small-pox. Some persons, who have had a very gentle small-pox, or only one single pustule, have been apprehensive of getting the disease again, but yet were always safe, tho' they conversed with persons sick of the malignant kinds. Some have chosen to be inoculated for greater security's sake; but the infection never would take, provided they had had the disease before, either by a natural contagion, or by inoculation.

When the contagion of the small-pox begins in a place, and the question is proposed, from whence they first got the contagion? The answer is obvious, that this infection has been circulating from one place to another, either by people or baggage, ever since the first introduction of the disease into *Europe*.

When the small-pox is conveyed to a place, it will not leave off, as long as there remains any body susceptible of the contagion, unless those who dread the disease most take the greatest care that it do not reach them or their children: that the winter's cold is not able to stop the infection, I found very plainly at *Upsal* in the year 1743.

There is no inevitable necessity, that every individual person must have this disease; how great a part of mankind is there, who have lived in *America*, without ever having had the infection? For the small-pox was first conveyed there from *Europe*, in the year 1492. Nor was it ever in *Greenland*, till it was conveyed there from *Denmark*, in the year 1733. Physicians have found, that among a hundred persons inoculated for the small-pox, there are commonly about five on whom the contagion does not take, and who consequently are sure not to get the disease; therefore among a hundred persons, there are 95 who have in their blood a disposition susceptible of the small-pox, and which never can break out, unless by infection. The same is the case with the plague; it never arises in us of its own accord, but is conveyed from infected countries, and never can attack those who fly in time.

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Whether there be any one among us, who never has had, or never gets the small-pox, is very difficult to ascertain. If the general rule be certain, that the inoculation does not take in five among a hundred, it is sure enough, that these will not get the disease. But it remains nevertheless a doubt and an uncertainty, whether they have not had them in their infancy, and of so gentle a kind, that the parents have looked upon the eruption as pimples. This puts me in mind of a young lady, who had the disease so favourably, that her parents did not suspect it to be the small-pox, but took her in their coach, on going to use the mineral water at *Sätra*. I met them by chance, and the journey was deferred till the disease was over. Besides we know several children to have had the small-pox at their births; from whence it follows, that a part may have had them in their mother's womb. Of several such instances, I will here only relate one, which happened about the year 1756. A child had crusts and scars of the small-pox on its body, when it was brought into the world; for the eldest son had the small-pox a little before this was born: all the other children got the small-pox six years after that, except this, who certainly had had the infection already in its mother's womb*. We have likewise instances of those, who first received the infection when they were old. A man at *Upsal* got the small-pox after his 50th year. Nevertheless the event was successful. A lady in *England* died of the small-pox in her 72d year. Another was infected in her 73d year, and with that remarkable circumstance, that the disease was first benign, but afterwards on the 15th day proved severe, and the pustules became confluent. In the parish of *Torsång*, and village of *Sylla*, in the great province of *Kopparberg*, a woman got the small-pox after having past her

* Physicians have written down several instances. See *Mead, de Variolis*, p. 66, 67. *Fulleri Exanth.* p. 192. Nevertheless, it does not always happen that a mother, who has the small-pox, infects her *fœtus*. See *Kirkpatrick*, c. i. p. 21.

Both year; she had a great number of pustules, but happily recovered. See the news-paper of the provinces, for the year 1770, No. 35.

We know very well, that fear cannot be the cause of the plague, as children have been infected by it soon after their birth; the same is to be understood of the small-pox; for a *fœtus*, when still in the womb, or soon after being brought into the world, is frequently infected, before it knows either what fear or small-pox signifies. However the infection takes more easily on those who dread the disease; for fear debilitates the nerves and heart, and makes the circulation of the blood slower, which causes the absorbent vessels to be more dilated, and to admit the infection the more easily.

The small-pox carries off yearly the tenth part of *Swedish* children. It is remarkable, that notwithstanding the male children are more numerous, nevertheless a greater number of the female sex die of the small-pox. On the contrary, the other diseases of children kill more boys than girls, so that both sexes are already at the fifth year of an equal number; but after the 15th, the female sex is found by far more numerous. See the *Transactions of the Royal Academy of Sciences at Stockholm, for the Year 1755*, p. 247.

In the small-pox, from the natural contagion, I find that Baron *Dimsdale* has likewise used, with success, his new method of treating this disease the same as in inoculation. Some cases of this may be seen in his book, of a *New Method of Inoculating*, &c. and which is now translated into the *Swedish* language, by *Archiater Beck*.

In the *Transactions of Zurich*, vol. ii. p. 386—414. is to be read a well kept journal of a cure of two children, ill of a severe small-pox, performed by Dr. *Zimmerman*, with assiduity and good judgment*.

* Professor *Baldinger* in *Jena*, whose merits in physic are well known, has printed this chapter separately, together with that of Dr. *Tissot*, on the same subject. He has thereby conferred much honour on me; but at the same time discovered my inferior talents, by placing me together with a man of such great merit.

C H A P. XIII.

On the Inoculation of the Small-pox.

THE accounts purposely kept all over *Sweden*, on the mortality in certain diseases, shew that the small-pox is one of the most fatal, and consequently one of the greatest causes of the scarcity of people, we so much complain of in this kingdom; therefore let us here consider the means and remedies, which, next to the Almighty, will enable us to endeavour, that but few persons shall die of this disease, otherwise so lethiferous.

The small-pox is contracted several ways: it would be of importance to know which is attended with the least danger. The surest would be, no doubt, to avoid the contagion by flight; but the mutual connection of mankind is indispensable. We meet one another in fairs, in churches, and a thousand other places. Our children lately deceased of the small-pox are buried in the church; we stand and walk on their monuments; we breathe the air infected with the *variolous* infection, which besides is carried from one house to another by dogs and other animals. In that respect, we have great reason to advance, that the small-pox is a disease unavoidable to the commonalty of mankind. Blessed therefore be he who can discover an antidote against this poison!

The late Doctor *Boerhaave* thought that he would be able to prepare a remedy of antimony and quicksilver, whereby the *variolous miasma* itself could be destroyed. Probably a few of his experiments succeeded; but repeated trials at last made him doubtful, as he, being a thorough honest man, would otherwise have made so great a discovery public.

It is probably on this foundation, that the physicians of *Philadelphia* gave those they had inoculated, every other night, a little *mercurius dulcis* and *antimonium diaphoreticum*, and every other morning *pulvis cornachini*,

cornachini, and at last *sulphur. auratum antimonii* mixed with a little *mercurius dulcis*. Notwithstanding this boldness, the above physicians had the satisfaction to find, that of 700 inoculated, only one died ; see *Kirkpatrick's Analysis*, p. 329.

Boerhaave was likewise of opinion, that we might suffocate this disease in its infant state, or before the small-pox should break out ; he looked upon the small-pox as an inflammatory fever, and on each pustule as a boil ; therefore he thought, if this inflammatory fever was cut short, or immediately moderated by copious bleeding, clysters, sufficient drink, baths, a cool room and refrigerant remedies, that no small boils or pustules would ensue ; perhaps he himself has frequently succeeded in this : this method was with the same success practised by *De la Metrie*, (if we may believe the assertions of this declared enemy to both religion and morals) : the honest and sincere Dr. *Cleghorn* used the same method, in hopes to save the lives of those who were infected with a fatal small-pox, which raged in *Minorca*, in the year 1746 : few were thereby relieved, and no eruption ensued in three or four subjects ; but notwithstanding his care in employing all that usually proves conducive in inflammatory fevers, the most part miserably lost their lives. The same we find of Dr. *Tralles dissertatio epistolica, de methodo medendi variolis hætenus cognita, sæpe insufficiente, &c.* besides, it is uncertain, whether those who are cured in this manner, can make themselves sure of not being infected again another time ; those who are cured of a pleurisy can several times get that inflammatory fever again.

They have succeeded better with the common people in the principality of *Wales*, in *Saxony*, and in *Sweden*, chiefly in the provinces of *Ostler-land*, *West-Gothland*, where it has been customary for a long time to purchase the small-pox ; but as they have not understood so well to prepare the body before the *variolous* matter was applied, we may find that their method of inoculation is not sufficiently safe enough.

The old pious Doctor *Lobb* entered into both the opinions of Doctor *Boerhaave*, and thought that he had found a powerful remedy in the *Æthiops-mineralis*,

mineralis, which either could alter the nature of the *variolous* matter, or diminish this poison to such a degree, after it was already mixed with the blood, that in fine it would not be necessary to stop at the surface of the skin, and then form pocks, but be qualified to perspire with ease: therefore when any contagion of a small-pox was spread, he gave those who asked his advice, of the before-mentioned *æthiops mineralis*, every morning and night, mixed with a little *flores sulphuris*, and told them afterwards to keep a good diet: he asserts, that several who could not avoid staying with patients affected with the small-pox, were for that time preserved from the contagion by means of this remedy, and that if any one happened to be infected, he had the disease very favourable; nay, he went so far as to think that he could, by a more free use of this same powder, quite suffocate the variolous fever in its first period, and so far alter the infected blood, that the poison of the small-pox should not take effect, but be partly obliged to transpire, and partly to be carried off with the urine; however he does not confirm this tale by any example.

To take of the *æthiops mineralis*, from six, ten, to 20, or 30 grains, twice a day, according to the age of the patient, I think to be very good, but it is attended with three inconveniences. 1. That a child finds difficulty in taking it, unless it be mixed with honey. 2. If he who takes it is disposed to looseness, the *æthiops* will intirely be carried off with the stools, and in that case nothing will enter the blood, and consequently it cannot prevent the contagion, or its effect. 3. On the contrary, if any one takes it who is subject to costiveness, he may easily, as experience has confirmed, fall into a salivation; this can however be prevented, by combining the *æthiops* with some gentle laxative and a little camphire; in consequence of this, we find that the pills of Mr. *Bellost* are likewise a good preservative.

The late Bishop *Berkley* enumerated, among the many qualities of tar-water, that of preserving from the small-pox, or at least rendering this disease more favourable: we are to begin with it as soon as the small-

pox

pox begins to spread in the neighbourhood, by drinking a larger or smaller glass of it morning and night, according to the age of the patient, thus continuing it till we either get the small-pox, or till the contagion has ceased: he pretends likewise, that it may be taken with success during the course of the disease itself.

This is a remedy which may always be procured, and without any expence: therefore the common people should give it to their children, who have not yet had the small-pox, in order to use it as above-mentioned, from the beginning of the contagion till it has ceased; it would be too tedious to quote all the *cases* which some *Englishmen* have written down, to prove this quality of the tar-water. Let it suffice then to observe what Doctor *Cantwell* has related. In a house in *Scotland* were four children; one of them caught the small-pox; their father let two of the others be inoculated, but ordered the fourth to drink tar-water; all these four lay in the same room; those three who had the small-pox were successfully cured, but the fourth who drank of the tar-water did not get infected; the father suffered it to be inoculated and to drink the tar-water again; but the contagion did not take. Two months after the inoculation was tried again, and no tar-water given it to drink; the child then at last got the small-pox, but of so gentle a kind that we could scarce look upon it to be diseased.

Some years ago, and in the parish of *Longthora*, which is situated about 15 *English* miles from *Upsal*, a small-pox raged, of so malignant a kind, that almost every child who was attacked with the disease died: as soon as their parents, on my intreaties, let their children drink some tar-water, both before and during the disease, the contagion turned so favourable, that scarce a single one died.

The preparation of tar-water may be made as follows: take six quarts of water, and three pints of good tar, stir them together for three or four minutes with a spoon or a spatula; when the vessel has afterwards stood for 48 hours, and the tar has had time to settle at the bottom, decant the clear water, and put it by in bottles; this is transparent, and as white as Spanish wine; its taste is something sourish, and grows
still

still more so if we evaporate a little of the water, and then it changes the colour of syrup of violets into red, and ferments with alkali; it consists of a fine oil, which by means of a small portion of its acidity is kept dissolved in the water, and consequently makes a fine soap, of a dissolvent, and at the same time antiputrescent quality.

In the year 1744, when a severe small-pox raged at *Upsal*, I began to give children preservative pills; and had the pleasure to find, that all those who took them, either did not get the small-pox, or had a very favourable kind. They have afterwards been used over the whole kingdom with the same success; and I never as yet heard that they failed, when the parents of the children had seen that they were really taken. Take the composition as follows:

R. Calomel rit. ppt. gr. xii.

Camphora, gr. viii.

Extracti Aloës, gr. xii.

Gummi Guajaci, gr. xvi.

M. f. s. a. Pill. pond. gr. 2. Folis argenti obducendæ

Dr. Sr. Preservative pills:

The dose may easily be ascertained for each person, that being the proper quantity which procures three or four stools. For instance, a child two years of age may take three pills; one three years old may take four; one five years old may take six; but a child being more than seven or eight years of age, must not take more than seven: if this dose should not be sufficient to procure stools, then I add to each dose of the pills one or two grains of the rosin of jalap, previously well rubbed with almonds. These pills are to be taken twice a week; for instance, every Sunday and Wednesday in the evening, and then they will operate on the Monday and Thursday in the forenoon. During the use of this medicine one ought not to eat salt food, and meat only at dinner; one may walk out in the open air as much as one chuses, except on those two days the pills are operating. When we know that the small-pox is in the neighbourhood, or in one's own house, or we cannot avoid seeing those who visit the houses where any one is affected with the small-pox; then

then we ought immediately to give of the above-mentioned pills to the child, letting it continue taking them till either the contagion has ceased, or till we are otherwise sure that it cannot reach the child: if we leave off the taking of the pills before that time, then we cannot attribute it to their fault, in case the small-pox should prove of a bad kind; we ought never to take a great quantity at once from the shops, for the camphire is easily volatilised, which however is most conducive in preventing the contagion; therefore the infection will not succeed, if the variolous matter be mixed with camphire and pomatum: but one may inoculate the small-pox with this unguent, by its being well rubbed on some part of the skin, provided the camphire is left out. That Calomel dissolves the blood, but especially the humours, is very well known; that it prevents the infection of the small-pox, may easily be inferred from the *cases* I have given in the transactions of the Royal Academy of Sciences at *Stockholm*, for the year 1751, *page* 32; and consequently these pills must, in respect to the small-pox, be of a much greater effect than only simply to purge; that they have been of service, is sufficiently proved by narratives, from the provinces, published in the news-papers. I am for the most part certain, that every child who is otherwise healthy, strong and well fed (for a weak child ought rather to be prepared with the Jesuits bark), will have a favourable kind of small-pox; 1. If it continues the use of these pills for four weeks; 2. If during that time it does not live on much nourishing food, and eats but little meat, 3. then visits any body affected with the small-pox, and as soon as it is found thereby infected, 4. purges by the pills again, and 5. suffers itself to be scratched, or scarified on several parts of the skin with a pin or a lancet, as for instance on the arms and legs. This latter will be of very great service and importance, as we know, if any body happens to scratch himself by a pin, or any other accident at the time of eruption, many pustules will break out on both sides of the scratch, in the same manner as they break out round the incision made for the inoculation. I moreover knew a child that got a severe whipping on its posteriors by an impatient mother, the day before the
I eruption;

eruption; this was attended with so good an effect, that the child got only one pustule in the face, but a great many about the marks of the rod; consequently the above-mentioned scratches made in the skin, are the best remedy to preserve the face.

In the northern provinces of *Sweden*, it is customary to hang a little musk on children, as a preservative against the small-pox when it is spread in the neighbourhood. I have not as yet had sufficient experience of this; I should think it would succeed, provided it were true, that the variolous contagion depended on insects: but another method of inoculating used by the Chinese, (for they have several methods) seems to be something against this. They take one grain of musk, putting it betwixt two large, or four smaller scales or crusts of the pocks; this is enveloped in a little cotton, and put into the nose*.

Others again are accustomed to carry quicksilver on their body, in order to prevent the infection of this disease. *Belloste* relates, that a noble lady had carried it on herself above 50 years, and was then passed the 80th, without having had the small-pox: *Belloste* himself used it in the same manner continually, and with the same intention, and had not then had the small-pox in his 70th year; he was of opinion, that the quicksilver forms a vapour about the body which the insects fly from; for he looked upon them as the cause of the small-pox, plague, and other eruptions: it is very probable that quicksilver sends such an exhalation from it, for if we lay a little of it in the middle of a large dish, and afterwards a *lumbricus* on it, we may perceive how the worm seems to be in pain, and retires to the edges of the basin with all its speed, and to the utmost of its power. Allowing such remedies not to be of great service, they will however

* In the cases which the Society of surgeons have printed in *Stockholm*, for the year 1769, fat of seals is praised. It is said, that the pocks will be but few and favourable, if any one who is infected takes twice a day a few drops of an oil expressed from it, continuing it till the eruption is performed.

do no harm *; they quiet the minds of many who otherwise would be in daily fear, and in that respect, at least, they are useful.

A lady from *Finland*, some years ago came over to *Stockholm*, and disclosed to the court a remedy which she had tried, in order to make the number of pustules in the small-pox but inconsiderable; it was communicated to me, and consisted in only this, that the patient should wear scarlet cloth on his body instead of linen, and have his face covered with the same. I applauded her good intentions, but looked upon the remedy as insufficient: I have since found that Doctor *Miag*, at *Basil*, let a child, on which he had inoculated the small-pox, from the beginning of the fever lay with stockings on made of scarlet, without soles. He expected that they would drive the small-pox down to the feet, by means of the gentle friction or titillation they would cause, as well as by the retention of the perspirable matter; and hoped thereby to preserve the face. When the time was elapsed in which the small-pox ought to have appeared, the stockings were taken off, expecting to find a great number of pustules in the legs; but to his great surprise he found only a couple of them there; as the body was well prepared, and the pores well opened by baths and washings, it appeared to him probable, that the greater part of variolous matter had thereby perspired; he proposes besides to strow some irritating powder in such stockings, for instance, as of mustard seeds. See the *Acta* of *Zurich*, vol. iii. p. 103. He tried it afterwards, but was obliged the next morning to take off these stockings so bestowed, as the child could not suffer the heat and irritation they caused. See l. c. p. 121.

* The rich are generally cheated by such remedies; as it happened with *Arnold's* bags against apoplexy. Their use at last ceased, when it was found that some of those who had worn them died notwithstanding, of the apoplexy. It is however happy when such remedies do not occasion any mischief, as it happened to those, who in hopes of avoiding the plague, bought and wore on their breast an amulet of arsenic. See *Diemerbroek de peste*, l. iv. p. 319.

Doctor *Casim. Medicus* has for a long time considered of the methods of eradicating the small-pox, and thinks that he has found the means for it, which he discovers in the second volume of his *Samlung von Beobachtungen*, p. 182. He once began to give his patients only the tincture of bark in some distilled water, when a severe kind of small-pox raged, but not till after the eruption; this he found to make the disease favorable. He gave likewise the tincture of bark to a child half a year old, from the first beginning of the disease, and found that it only had two pocks. See l. c. p. 726, to p. 732. This encouraged him to go still farther. As he knew that the first fever of the small-pox was an inflammatory one, he thought like *Boerhaave*, that if this fever could be subdued, no eruption would ensue; therefore he advises to use from the very beginning, all that is proper in inflammatory fevers, as bleedings, emolient clysters, cooling emulsions, and a copious drink of barley water: but the peculiarity of his discovery is, that at the same time he gives the bark in powder, which perhaps no one before him has thought or ventured on. He is however careful to cleanse the stomach beforehand with an emetic, in case it should be wanted, and in that he is very much in the right, as the bark will be inefficacious if the stomach is loaded with slime, bile, or crudities; should any thing of that kind be in the bowels, then he prescribes purges of manna, tamarinds, and a little jalap; or he gives magnesia and *cremor tartari* together with an emulsion. If the first fever is not very high, he uses only to mix the bark with a little *cremor tartari*; if, contrary to our expectation, the small-pox should break out and not immediately disappear, then he advises to apply a vesicatory of cantharides, which is to drive the eruption to some place where it cannot deform the patient, or do any harm, and to prepare an exit for the variolous matter by the same means.

All this sounds extremely well; time will shew whether experience will confirm it or not. As far as I can find, the author seems not to have yet tried it in the year 1765; but only makes this conclusion in consequence

consequence of the theory, and the success of the method in other inflammatory fevers, (see l. c. p. 432—464.) and by the similarity with the measles, miliary and other petechial fevers, &c. He also advises to try this on children in inoculating them, in order to find whether the bark would then prevent the eruption.

The late professor *Monro* relates, that a lady suffered her children to use a bath every day during the course of a severe small-pox; the bath being prepared of water and juniper-berries, and their room besides smoaked with the juniper-tree; this had so good an effect that among eight or nine children, not one was infected: I should not have mentioned this, had not so great a man as Dr. *Monro* recommended the trial of it.

However, the surest method to prevent the dangerous effect of the small-pox, is to inoculate * it on children, while they are still young, and in the manner as is now customary in *England* †. It is both very disagreeable

* See more of this in the perfect and well written narrative by Professor *Dav. V. Schulzenheim*, on the inoculation of the small-pox; and in the extract of Mr. *Chaise's Essai apologetique*, under the title of Answer to the Objections, &c. published in *Sweden* by Mr. *Rosen*, first chaplain to the king.

† The famous lady *Mary Wortley Montague* is the first who introduced the inoculation of small-pox into Europe. She had her son inoculated at *Constantinople*, at the age of six years; and her daughter inoculated in 1722, after their return to *England*. However, for the satisfaction of the court, the experiment was first made on six convicts, who were successfully inoculated, and thereby escaped their sentence of death. The great king *Charles* the XIIth of *Sweden*, during his stay at *Bender*, ordered a circumstantial narrative to be written concerning the inoculation of the small-pox, and with what great success it was practised among the Turks; this was sent to *Stockholm*, but I have not as yet been able to find out whether any one at that time made trial of it in *Sweden*.

It is both strange and unaccountable to find how many means have been taken in *England*, by those who were against the inoculation, in order to deter the nation from

disagreeable and inconvenient to lie under a necessity, either to take the *æthiops* or the preservative pills, or to

it. Among others, a wretched fellow named *Jones*, related that he had successfully inoculated his daughter, but she three weeks after that got the small-pox again by the natural infection; on inquiry, he was obliged to confess in letters to Doctor *Jurin*, that he did not know what inoculation was, and that he had never inoculated any human being during his life. *Kirkpatrick* has introduced the whole letter in his new edition of the *Analysis* of, &c. p. 147. The inoculation of the small-pox has met with no declared enemy in *Sweden*, but most likely has some secret opposer; as the writings of *M. de Haen* have been placed in houses of the utmost consequence, without being able to discover from whence. In the year 1761, several houses were mentioned, in which it was said that inoculated children had got a severe small-pox again. I went on purpose to visit both the parents and children, and found, on enquiry, that all was an impudent fiction; this, and all the inventions employed in *England*, have persuaded me that the cases which are related from other countries against the inoculation, may be equally false and uncertain. Those who chuse to know the origin and fate of the inoculation in this kingdom, will find it in a well composed gradual dissertation, by professor *J. A. Murray* in *Gottingen* 1767, intitled, *Historia insitionis variolarum in Suecia*. The Dr. and Assessor *Hast* has done the greatest service to inoculation in this kingdom; he inoculated in one year 229, the greatest part of the children of the common people in *Oesterbothnia*. We cannot sufficiently extol the great care of his majesty, who in a conspicuous manner has encouraged both the Doctor and the common people to this purpose. See the news-paper from the provinces for the year 1763, No. 86.

The royal college of physicians have likewise continually encouraged the physicians of the provinces to inoculation, and chiefly sent the Doctors *Aman*, *Nordblad*, and *Sahlberg* to *Norrland*, and *Ekman* to *Ostrogothland*, where they have inoculated a great number of the common people's children. Assessor and Doctor *Wahlin* has also inoculated as many subjects as were to be met with in *Jonköping*, as also several children sent to him every day from the country; the inoculated were suffered to walk about, nevertheless the infection was not spread: a single child on which the inoculation did

to drink tar-water for a long time at each contagion of the small-pox ; but it is dangerous to live exposed to this severe disease when the body is not well prepared ; and there is still more danger in not being infected before we are advanced in years. We may be surprised by the small-pox on our travels, at an inn, or at places where we must be destitute of both physicians, proper medicines, and nursing ; we may happen to catch the infection during the heat of the summer, when we have lately been exhausted by some other severe disease, or by night-watching, or by labour ; or at the time some more severe epidemical disease is raging, such as the miliary fever, pleurisy, peripneumony, and petechial fevers ; or when we have been overloaded with spirituous liquors or improper food ; or from the body being full of bad humors. Ladies especially ought to insist on being inoculated, as their beauty is so often lost or endangered in the small-pox by the natural infection ; their own life and that of their *fœtus* being greatly exposed thereby during their pregnancy. The many instances of those who by this disease have lost their sight, hearing, and speech, are strong motives enough for us gratefully to accept of a remedy which prevents all these misfortunes. The more sensible persons, who know that the loss and want of people is of great consequence to a kingdom, and that the tenth part of *Swedish* children are carried off by the small-pox, ought by their example to actuate others to inoculation. What a great loss is it to a country like *Sweden*, to lose yearly 9000 persons by the small-pox and measles * ! We ought likewise to be encouraged

did not take, was infected by being in the same room with its sisters who had the small-pox from inoculation. Want of room and opportunity hinders me from enumerating any more : each in his province has shewn how useful they are to their country.

* One of the commissioners for counting the people has communicated to me the following List of the number of those who within 16 years have died of the small-pox and measles.

I 4

Years.

encouraged to this by the example of other civilized nations, who have already received this remedy, and found it to be both innocent and useful, and the best reparation for the want and loss of people in a kingdom; and besides, I am daring enough to advance, that we ought to allow ourselves to be persuaded to inoculation by physicians, who ought, and do in fact understand it, and are proper judges in those matters: every thing is in favour of inoculation, as theory, experience, religion and morality: in the small-pox of the natural contagion, one person out of seven dies that are infected *. In the hospital of *London*, where those are taken

Years.		Males.		Females.		
1749	—	3659	—	3616	—	7275
1750	—	3838	—	4015	—	7853
1751	—	3360	—	3393	—	6753
1752	—	5398	—	5514	—	10912
1753	—	4362	—	4570	—	8932
1754	—	5103	—	5288	—	10391
1755	—	3680	—	3764	—	7444
1756	—	5868	—	5960	—	11828
1757	—	5643	—	5660	—	11303
1758	—	3979	—	3913	—	7892
1759	—	2543	—	2629	—	5172
1760	—	2276	—	2415	—	4691
1761	—	3761	—	3884	—	7645
1762	—	6088	—	6324	—	12412
1763	—	8554	—	8819	—	17373
1764	—	3180	—	3138	—	6318
		71292		72902		144194

During the same time in *Sweden* were born 1,391,233 children, of whom 709,090 were boys, and 682,143 girls; consequently every 10th boy died in the small-pox or measles, and nearly every 9th girl, or more accurately 100 among 936: the two diseases are put together in the list, tho' they ought to be separated. But as the measles are much less *lethiferous* than the small-pox, the number of dead above mentioned are for the greatest part owing to the last.

* Mr. *De la Condamine* (*Lettre a Mr. Maty*, 1763) shews that in *France* 30,000 persons are lost every year in the small-pox, and that 25,000 of these might easily be saved by the inoculation. We are in a great measure obliged to him for the lives which are saved in *Sweden* by means of the

taken care of who get the ordinary small-pox, two are lost out of nine. Some years ago 270 died of this disease out of 300 children of the soldiers of the royal guards : among those who are inoculated only one of 250, 425, or 500 ; nay if the preparation has been good, and nursing also, perhaps not one would be lost out of several thousands ; the ordinary small-pox will mostly infect the face ; in the inoculated the greater number of pustules breaks out on the arms, and the varicellous matter is in part discharged through the wound of incision * : the eruption seems however not to be diminished by that, as the suppuration of this incision is not very great in the beginning. It is said that the ordinary small-pox may return, tho' I never have seen it, nor has any one of the most accurate observers and physicians, as *Boerhaave*, *Mead*, *Chirac*, *Molin*, and the physicians in *Scotland* and *Sweden* ; but of the many thousands inoculated we have not had a single such instance † that is well authenticated. I cannot look
upon

the inoculation ; for it was owing to his correspondence with the Count and Senator *Scheffer*, that the inoculation was supported and encouraged by the Senate.

* What Mr. *Gandoger Foigny* says, in his *Traité de l'Inoculation*, p. 278, seems not to be in consequence of experiments ; it would be worth while to try it.

† That the inoculation did not properly succeed on the five sisters, who were inoculated by the late professor *Roderer*, is demonstrated by professor *Wrisberg*, in his excellent treatise called, *De Insitione Variolarum momenta nonnulla*, 1765. Mr. *Foigny* relates, l. c. that Doctor *Richard de Hautefercy* inoculated a young person every fortnight for a whole year ; the first of these inoculations took, but none of the others did ; this young man was not in the least injured in his health by so many inoculations. Dr. *Maty* let himself be inoculated, but without any effect, for he had already had the small-pox before by the natural infection. Mr. *Gatty* says, that if an inoculated person only get a single pustule, that the *pus* in that ought to cause small-pox for the second time, and the *pus* in those for the third time, and so further, for he would look upon it to be as many inoculations ; but such a thing has never yet happened. When the question is, whether an inoculated person who has not got a distinct eruption, can make himself sure of not having it again, or not ? Mr. *Foigny* an-
swers,

upon the contagion of the small-pox to have taken by inoculation ; 1. If the edges of the incision have not suppurated any thing ; and 2. no fever has followed on the 7th, 8th or 9th day ; and 3. after that no eruption either more or less has broke out, of which a part has ripened, suppurated, got crusts, and at last is fallen off ; or 4. in case no eruption has happened, and the wound of the incision has notwithstanding discharged a copious matter for some time. That this is a varicellous matter, is sufficiently proved by Mr. *Wall* and Mr. *Gibbes* having inoculated others with it ; see *Kirkpatrick*, c. i. p. 164 and 413. A noble lady was inoculated four years ago, and got only eleven pustules ; immediately after that she slept in the same bed with her cousin, who then had the small-pox, and without being infected. Professor *Schulzenheim* inoculated 37 children in the hospital which is kept at the expence of *Free-masons* in *Stockholm* ; three years after that, when 17 other children were naturally infected by a malignant small-pox, of which nine died, the former did not receive the least injury, tho' they lived in the same room with those thus severely infected.

The inoculation will not take in any one that has not a disposition to the small-pox : nevertheless he may find himself thereby secured and freed from that daily fear of being infected, which he otherwise would have had reason to apprehend *. We do not tempt the Al-

fwers, that we ought to take notice of the incision wound, whether it be round or oblong, large and shining : from that case he says, that such a person has had the small-pox. In a negro, inoculated by professor *Schulzenheim*, I saw myself that the scar was in the beginning whitish, but within a short time turned black again.

* My old true and worthy friend *V. Haller*, prepared his daughter for inoculation for four weeks together, in the year 1757 ; she was not then 15 years old, but had her menses. She lived during the time only upon vegetables, used warm baths for the feet, and took purges ; then the inoculation was performed, but ineffectually, for it would not take, tho' repeated three times. She was afterwards married and had seven children, the greater part of whom she nursed herself during their small-pox, without being infected. See his *Opusc. Min.* iii. p. 356.

mighty

mighty by the inoculation of the small-pox; nor do we thereby oppose his omnipotence; we are not so daring as to implore him for a miracle, but use this as we might another natural preservative and remedy, which he has graciously destined for mankind, whereby they may subdue an unavoidable and frequently *lethiferous* disease. Why should we think it sin, to receive this blessed remedy gratefully, which providence has been pleased to suffer to be discovered, and which has already saved so many thousands of lives? Nay how can it be consistent with an honest and good conscience, to suffer the natural infection to ravage among mankind, and despise or neglect a remedy which we know can preserve us from the danger? See his excellency Count *Tessin's* letters to the Hereditary Prince of *Sweden*, the second Volume.

I hope no more arguments are wanted to persuade my countrymen to receive the inoculation universally, especially as it has already with such great success been performed in *Abo* and in *Upsal*, and 1757 in the month of *March* at *Stockholm*, in a noble family* whose example several will certainly follow †. Now only remains

* *M. de Geer*, one of the lords of his Majesty's bed-chamber, together with his lady Baroness *Ribbing*, resolved to inoculate their four children; which so much rejoiced the great counsellor Count *Tessin*, that he in memory of this, ordered a medal to be struck, on the one side of which stood the name of the Baroness, with this inscription, *Ob infantes civium felicia usu servatos*, and on the other side a snake with the inscription, *Sublato jure nocendi*.

† This really happened afterwards, as may be seen in the narrative of the physicians of the provinces, sent into the college of physicians, printed in *Stockholm*, 1761. What is most happy to the whole nation, the inoculation was in a happy hour, in the year 1769, likewise received into the royal family, and successfully performed on five of them: four were first inoculated within the same hour, and the fifth some weeks afterwards; all of them fell sick on the fifth day; four were inoculated by a small vesicatory of cantharides, and the fifth according to his own choice by incision. The *variolous* matter for inoculation was taken the day before; the wounds were alike in all, the crusts on them acquiring a dark pewtery colour on the seventh day, which was the day before the eruption. All were before prepared for

mains for us to consider how the inoculation itself is to be performed.

The small-pox may be inoculated on young and old, full grown persons and tender infants: I rather would not chuse to inoculate on the latter, before the *meconium* is carried off, and a time fixed, in which we have nothing to fear from the teething; their nerves are then too sensible, and thus are liable to get convulsions at that time, which always make the prospect dreadful. Nevertheless, I know that it has succeeded with professor *Schulzenheim*, who has several times been obliged to do it: Dr. *Maty* recommends it with very good arguments in the *Medical Essays*, Vol. III. p. 287, and Doctor *Locher* at *Vienna*, in the year 1768 inoculated 34 new-born children, of whom the oldest was only seven days old; it is rather to be admired that only one died; for both the room and nursing were bad; the mother of that child who died, had contracted a diarrhœa by walking on a stone floor bare-footed, and keeping her disorder secret. See *Maxim. Locher's observationes, practicæ circa inoculat. variol. in Neonatis instit. Vindobonæ*, 1768. Dr. *Dimsdale* excludes only from the inoculation, such as are affected with inflammatory or *exanthematic* fevers, or have evident signs of acrid and corroding humours, who pine away, or frequently are troubled with agues. He rather excludes women who are big with child; but he pretends that those who have laboured under any chronical distemper, disposition to the king's evil, scurvy and gout; or are corpulent and inactive, or have lived immoderately, have been inoculated with the same success as the most healthy and moderate. See his l. c. I would rather cure pimples of the face before I inoculate, which may easily be done by a good diet and the above-mentioned pills of calomel, *sulphur auratum antimonii*, &c. and by purges.

Girls who are in the 14th or 15th year should not be inoculated, unless they are otherwise very well in

for a fortnight together, by a proper diet, and pills of calomel, *sulphur auratum antimonii tertiæ præcipitationis*, camphire and *gumm. guaiaci*; these pills were taken twice a week, and the following day a gentle purge, accommodated to the taste of each,

respect

respect to, and just after the three first days which are usually troublesome to their sex. We ought carefully to avoid inoculating any one who is perhaps infected already, as then the pustules will break out too soon, and if they be malignant, it will be ascribed to the inoculation; therefore whoever is to be inoculated, should first keep within doors for about a fortnight, so as to prevent the contagion reaching him; this is easily attained by those who have more rooms than one, so that the child may stay in the inner apartment, where none should be admitted except those who are to attend the child. We find the importance of this from what Dr. *Archer* relates to Doctor *Kirkpatrick*, that among 33 children he intended to inoculate, 11 were infected with a natural small-pox during the time of preparation, by which three of them lost their lives; see his *Analysis*, p. 412. One ought not to admit any one who comes from a place where any other contagion is spread, to see the patient who is inoculated: it once happened that the hooping cough was conveyed to one of my patients, who had the small-pox; the pustules were drying when the child got the other disease, and would have suffered much if the small-pox had not been so favourable, that scarce any thing of its strength was lost; the child was likewise cured of this disease, but with more difficulty than the former. I was so much the more convinced that this had been a true hooping-cough, as besides the disease being attended with the ordinary symptoms, the child was not infected the following year, tho' it was for three weeks together in company with two other children who had a violent hooping-cough.

Nobody should be inoculated who is not (if it be wanted) well prepared; which is to be done by the above-mentioned preservative pills *, in the mean time
taking

* Or by one or two grains of calomel taken together with a grain of camphire in a wafer towards night, and the next morning a moderate dose of *electuarium lenitivum*; consequently we find, according to my own repeated experience and that of many others, the precaution of M. de
Hæm

taking care to avoid excess in food and drink, in labour, exercise and night-watching, leaving strong nourishing food, or that which is salt, smoaked, sour, hard, seasoned or rich, especially at supper: those who are weak may be allowed to feed better than those in perfect strength; for the body ought to be put in such a condition, that the *variolous* fever does no harm without being suffocated, for in that case the pustules cannot break out, rise, ripen, and dry: for all our intention by the preparation ought to consist in effecting,

1. That the body does not suffer by any other disease than the small-pox.
2. That the blood be neither too rich nor too poor, as the fever in the former case may be too violent, and in the latter too slight; in which latter case, the *variolous* matter might, according to the vulgar expression, lay itself on the nerves.
3. To soften and relax the solid parts in case they seem too hard, dry, and rigid, and *e contra* to strengthen them if they are too relaxed.
4. To correct a bilious constitution, for that is generally attended with a severe small-pox: of such a nature was that of the universally beloved Count *Gisor*, who was inoculated in the 24th year, but by the means of a good preparation, went through this sickness with ease: therefore if a person be plethoric, he should be bled the same day the inoculation is performed: those who are of a dry and lean constitution, ought to bathe in warm water several times; if they have weak lungs, they ought besides to drink whey, (*petit lait*) or fresh and strained butter milk; but if they are affected with any other disease, as looseness, worms, scab, boils, miliary fever, or any thing similar, these diseases ought to be cured *. Children who generally are

Haen to be quite unnecessary. Assessor and provincial physician Dr. *Haft*, has inoculated 55 children of the common and poorer people, with the greatest success, and without any preparation, as they most likely did not want any. See the News-paper from the Provinces, No. 62, of the year 1770.

* Such disorders ought certainly to be cured beforehand; but sickly persons then are not at all to be inoculated? If the

are great eaters, ought to be prevented from gorging too much, neither ought they to be suffered to heat themselves

the inoculation is a remedy which makes the small-pox less dangerous and more favourable, and the sickly be as much exposed to the contagion as others, it plainly follows, that the benefit of being inoculated ought not to be denied them : for if they are with difficulty cured of the small-pox when inoculated, they certainly will lose their lives by it, if gotten by the common contagion, as it is most probable that they will have a severe kind. In the interim, we should rather chuse healthy subjects to inoculate on till this operation be generally received, and looked upon to be as innocent a remedy as bleeding, or the use of mineral water. When from the public it has gained such confidence, we then may go on still further, and use this happy remedy for other diseases, which are otherwise commonly incurable, as mental disorders, the hyp, convulsions, epilepsy, paralysis, *gutta-serena*, stubborn agues, &c. We have now hopes of performing great things by the inoculation, on reading what Dr. *Lobb* relates in his book on the small-pox, Tom. II. hist. xlix, of a youth 12 years of age whom he inoculated ; and from what is mentioned in the Literary Gottingen Gazette, 1757, p. 1300 ; as also from the story of Mr. *Williamson*, whose sickly constitution was so far mended by the inoculation, that his friends did not know him. (see *Kirkpatrick*, c. i. p. 276). Professor *Schulzenheim* inoculated the small-pox on a child which had a weak sight ; but as soon as the small-pox was over, its eyes were much better. A noble young lady who was inoculated on the leg by professor *Haartman*, thereby got rid of a running of the eyes of many years standing. Professor *Schulzenheim* and *Bergius*, have experienced the same by inoculating on the arm. I will here likewise mention a remarkable cure performed by professor *Muzel* in *Berlin*, 1754 : he received into the hospital a man about 28 years old, who through grief for the impious conduct of his sisters, had ruined himself so far that he had only the resemblance of a man ; he gave not the least sign of sense or feeling, was lean and pale, and had a weak and slow pulse : he was retained in the hospital for two years, and all possible means were thought on and tried to relieve him ; as nothing succeeded, he was inoculated with a scab, which the following day caused a violent fever, with such a salutary effect,

themselves by too much playing; they ought especially to be prevented from such plays by which they may hurt themselves, (see the *Acta* of Zurich, Vol. III. p. 68): girls ought at that time to pull off their stays; those of a bilious constitution, ought to drink freely, and to take one or the other emetic, abstaining from all milk and fat food: they should mix in their soups and stews of herbs, a little juice of lemons or good vinegar: those who cannot take the pills may be prepared with the tar-water during three or four weeks beforehand, and take a gentle purge every fourth day of the *electuarium lenitivum*, or something similar, according to the constitution and age of the person: those who cannot bear the tar-water, may content themselves by keeping a good diet, and sometimes purging. However, I have the greatest confidence in quicksilver, especially as I cannot find but that it otherwise diminishes the disposition in the body of receiving and nourishing the *variolous* matter, or else how would the method of Baron *Dimisdale* succeed so well as it does? I conceived that opinion in 1744, when Mr. *V. G.* was affected with a confluent small-pox, and I wished to secure his two brothers from so malignant a kind, which likewise succeeded, by the use of the above-mentioned pills: one of these two continuing the use of them likewise after the fever had began, without my knowledge, he got a slight eruption on the 3d day, which on the 4th disappeared, together with the fever: he continued however very well, and got the *variolous* fever a fortnight afterwards, and only five pustules. Dr. *Watson* in London, tried to find out the difference between inoculating with and without preparation, in the following method; he inoculated eight children after the new method, one half of which were boys and the other half girls, from six to twelve years of age, they being prepared by a couple of purges of 10 grains of jalap and four grains of calomel; the pustules counted together made, at a medium, 14 for

effect, that the patient quite regained his understanding on the 9th day, and was able to leave the hospital after three weeks, perfectly restored to his health.

each

each boy, and five for each of the girls: four other boys and as many girls were likewise inoculated; after being prepared with a laxative of *infusum sennæ*, and the *syrupus rosarum*, the number of pustules counted at a medium, were about eight for each child: but of 11 who were inoculated without being prepared by any purge, the medium taken of the number of pustules amounted to 32 for each; all these were nursed alike: now if the danger of the small-pox depends on the number of pustules, every one may from this easily judge of the utility of purges during the preparation also in younger children. See *Archiater Bæck's* preface to Dr. *Dimsdale's* book on the inoculation of the small-pox, p. xv *.

As a proper drink during the preparation, we may use water mixed with milk, good small beer, or a ptisan of *radix chinæ*. Mr. *Tissot* recommends very much whey or *petit lait*, and that with good reason: as a proper food, we may prescribe dishes prepared of milk, gruels, groats, bread and soups; frying fish, hashes of fish, or fish stewed with rasped bread, or with the leaves or the roots of parsley, however this ought to be done with but very little butter; spinage stewed with soup for dinner, and without soup for supper; spinage or other greens stewed with fresh cream is good, but ought to be less frequently used: a child may eat puddings of bread, or spinage, some sorts of cakes and wafers, but no pancakes, or such as are fat. Those who appear tender and are weak, may be allowed to eat veal and chicken broaths, and hash meat: those who are not troubled with a looseness, ought frequently to eat dishes of herbs, and stews of apples and plumbs, for they ought to have stools every day: the poorer people who cannot afford such a variety, may content themselves with milk barley-soups, groats, ale-soups, milk-whey made of small beer and the like: we may eat the dinner in a due quantity, but supper ought to be reduced, as otherwise the food will not be digested, and the sleep will be uneasy.

There is however no possibility to give any general rule for the preparation, as different constitutions of

* The Swedish Translation.

bodies, will require different preparations. A tender and weak child, who is often plagued with acidity in the stomach, vomitings or too great a looseness, or who has some signs of the rickets, wants a longer preparation, than one who has a good appetite and is of a healthy and jolly appearance; this latter needs only to be reduced to a less quantity of food, and to drink whey. Children are well prepared when they are hungry at the customary times, sleepy and awake at the usual hours; when they have a due number of stools, the lower part of the belly soft, and the breath sweet; when they are in good spirits, and feel themselves active and light. If at the same time it happens, that the air is not too hot, too cold, or too moist; if no other contagion is raging which likewise attacks children, and the person to be inoculated does not fear it; then we have the greatest reason to expect good success.

The matter for inoculation may be taken from the wound after the incision, either by the point of a lancet or by a cotton thread. The confirmations of *Sutton*, *Watson*, *Dimsdale* and others, shew that we need not wait till it becomes yellow or ripe; they pretend likewise, that the unripe matter will cause a less number of pustules when their new method is used, and that very little of it is required to propagate it: however *Dr. Dimsdale* seldom depends upon a single incision, but makes another in order to make himself the more sure that the contagion shall take: he likewise collects the matter for inoculation during the eruptive fever, in expectation that it is then more effective. When he collects this matter from an inoculated person, it is taken from the wound of incision, being very well convinced that the matter taken from thence is powerful enough to infect, in case the contagion has taken in that wound: the fresher the matter is, so much the better it will be: there is sometimes scarce any *variolous* matter to be got in the smaller towns and in the country; therefore it is necessary to preserve some dry threads for inoculation in a phial to use occasionally, by which we can soon get a fresh contagion; we cannot exactly fix how long a time it will preserve its power to infect; but *Mr. Tissot* has inoculated with such a thread 26 months old, and *Kirkpatrick* with one, which was preserved five years

years and 11 months : we may likewise keep some crusts of the small-pox for the same purpose, as is practised by Assessor *Hast*.

The best time for inoculation is when the person to be inoculated is under such circumstances as are above enumerated as favourable, either during the spring, summer, harvest, or winter ; because it is now performed in all seasons, and with equal success : the inoculation is performed in *Constantinople* during the winter only, as either the plague or the pestilential disorders commonly rage during the other seasons of the year. We ought however to defer the inoculation if any other epidemical distemper rages ; this is likewise agreeable to the opinion of Baron *Dimisdale*. The late professor *Monro* relates, that a certain physician, during the time he visited many patients in the miliary fever, inoculated the small-pox on his own son : he was affected with the miliary fever upon the eighth day ; but this was soon cured ; after that the small-pox broke out, and was likewise favourable : several others were inoculated by the *variolus pus* taken from this patient, and all of them were affected with the miliary fever together with the small-pox : the event was successful, nevertheless I think it imprudent. *Vide Journal des Sçavans*, 1766, for Jan. p. 227.

The patient ought to take a gentle purge the day after the inoculation ; he may likewise then begin to bathe his feet every night in warm water. I make the incision on the arm just at the place where issues are commonly made ; we may inoculate on both arms, in order to be certain of the infection succeeding : I rather choose the arm than the leg for this purpose, in order that the patient may be able to walk during the disease. We may make a scratch of the length of about half an inch, between the upper and inner skin, obliquely with a lancet, so that scarce any blood comes out ; in this wound we put the thread for inoculation, not covering it with any plaister (unless perhaps the first day), but only with a bandage to prevent the thread from falling out ; a little cotton should be put between the wound and the bandage, as they otherwise might stick together ; digestive unguents are unnecessary.

Children are generally frightened at the incision, especially if it is to be done in more than one place; therefore I think it much more proper to use a vesicatory instead of it, which is oblong and but very small*; we apply it in the evening, and take it off again the following morning, together with the thin elevated skin, drying the place with soft linen; after that the thread for inoculation is to be put in it, which we secure by means of a little cotton and a bandage: if after one or two days there is no redness found on the edges, we may put another thread in, and if it be wanted likewise the third and following days: I have as yet never found this to be attended with the least inconvenience as M. *de Foigny* pretends. We may easily follow the advice of professor *Schulzenheim*, and apply three different threads at once, which certainly will make the infection succeed; four persons of our royal family here, were in this manner inoculated. Baron *Dimf-dale* admits the person going to be inoculated, into the same room where a patient lies affected with the small-pox, and fetches some *variolous* matter with the point of his lancet, either from the wound of inoculation or (in a natural small-pox) from a pustule, so that both sides of the lancet are wet; with this he makes a little opening on the arm, and no deeper than that it pierces through the exterior skin, and only touches the interior; and with respect to its length, as short as possible, and no more than the eighth part of an inch; he extends this small aperture by the thumb and his fore-finger, striking gently over the wound with the flat side of the lancet: the wound is in this manner moistened by the infection (see c. i. p. 16). I think it would be safer not to admit the person going to be inoculated into the same room, tho' he may come into the same house where any one is affected with the small-pox. Professor *Schulzenheim* and Dr. *Ahman*,

* Assessor *Hast* looks upon this likewise as the best and surest way. He puts in it a couple of scales of the small-pox, which he endeavours to cover with the thin elevated skin (*epidermis*). See the reports of the physicians to the provinces, to the *Collegium Medicum*, 1769, p. 543.

who sometimes have inoculated in the manner of Baron *Dimsdale*, always made the incision in the next room to that of the patient, which was attended with success: what is to be further observed in respect to this new method, may be seen in Dr. *Dimsdale*'s book, and in the preface which *Archiater Bæck* has written to it in the *Swedish* translation. Last spring I inoculated three children in the country, two of them in the manner above described, and the third after the method of Dr. *Dimsdale*, only with this difference that I used a vesicatory and thread instead of a lancet: the inoculation did not succeed in one of them, notwithstanding I applied new threads; its mother recollected afterwards that it had had the small-pox before; the other got a favourable small-pox, but was so peevish that I could scarce prevail on it to sit up at all, much less to walk out in the open air; the third had the disease in a very easy and gentle degree, was chearful, and walked out in the cold air, whenever it found itself any thing indisposed, and was thereby again refreshed, and did not want any other remedy. Assessor *Hast* has often inoculated after the method of Baron *Dimsdale*, and recommends it much; he likewise observes, that the common people have become more inclined to receive the inoculation for their children since he began with this method, as they then want less nursing and attendance, and are left to their usual liberty, which makes them more chearful and happy. See the narrative of the Prov. Phys. to *Coll. Med. c. i. p. 467* *.

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* I have thought it safer, that the person on which I inoculated should keep a handkerchief on his mouth and nose, in order to prevent the steams or exhalations from the *variolous* matter to infect by that way, and cause a natural small-pox. This I find displeases Doctor *Fr. Casimir Medicus*, in his observations, Vol. II. p. 771. I have likewise been of opinion that a physician, who has several patients affected with the small-pox to visit, ought to change his cloaths intirely before he goes to see a person lately inoculated: and that the inoculated one should not see or come near any one who late has had the small-pox, unless we, by certain signs in the incision, judge that the inoculation has succeeded;

Those who think it more convenient for the dressing of the incised wound, may, during that time, have a jacket on, with the sleeves slit, and tied at the edges, in that part which answers to the incised wound.

ceeded ; for it is likewise a necessary precaution to avoid the natural infection. Nay, I have not allowed a person lately inoculated to receive letters from a place where the small-pox rages, as I know the contagion has been conveyed in this manner from *Upsal* to a parish in *Nerke*, about 100 English miles distant from each other. In consequence of this, I think Mr. *Sutton* and Dr. *Dimisdale* venture too much in this respect, tho' I ought not to express myself so of these gentlemen, who have had in this, greater experience than any other persons. However I cannot reconcile this with what Dr. *Dimisdale* says (p. 81, *Swedish* edition), that he indulged an inoculated person to undertake a voyage, but advised him not to enter into any company where he might spread the contagion by his breath, which had then the stench with which this disease is usually attended (p. 29, 31. *ibidem*) ; it may be, that the running matter which is taken from the incision wound before the eruption does not smell ; but it is very certain that ripe matter has a smell, which therefore might possibly infect notwithstanding the quickness of inoculation ; therefore those who have not injured their organs of smelling by snuff, are able to feel and foretell the day when the small-pox will ripen : as also to know, by the breath of the patient, if the inoculation has taken effect or not. For the same reason it is a common opinion, that a person who has not had the small-pox runs a greater risk of being infected, if he visits a patient whose small-pox are ripening. Therefore it was said, that her Royal Highness the Princess *Hedviga Sophia* received the contagion at a visit, where she happened to go through an apartment, close to which a patient was affected with the small-pox : her Royal Highness, who knew nothing of this, felt however the smell, and immediately put her handkerchief to her mouth and nose ; but the infection had already taken, she got the small-pox, and died 1708. However it may be possible that the infection of the *variolous pus* is not volatile, as we find that a crust of the small-pox, or a dry thread for inoculation, likewise conveys the contagion by inoculating ; and in that case we should receive the infection only by contact, as in the scab and the venereal disease.

To have always a plaister on it occasions a confusion, so that one cannot tell how the inoculated matter operates; the first day after the incision, no alteration is to be found in it, but on the following days the skin at the edges of it begins to appear as it were contracted, grows red, and itches. On the fourth and fifth day a hardness will be perceived in it, and the inoculated person feels a tenderness in the armpit, a heaviness and pain in the shoulder, and a pale stroke, mark or scratch is to be seen in the wound; small bladders will likewise break out all around it, sometimes in great numbers, and the red spot grows larger; on the 5th, 6th, 7th, or 8th day (for it happens differently) the inoculated person begins to be indisposed, is uneasy, affected with slight *spasms*, a redness in the face, a heaviness in the forehead, a pain in the head and back, a *nausea* and a disposition to vomit. The fever begins, continues for three days, and is most severe at the end of the third: the scratch is now dry, and the crust looks dark and of a lead colour, the redness about it is now likewise spread further*. The fever is generally so gentle that the patient can walk about: I commonly order at this time a piece of linen, previously well rubbed with camphire, to be fastened to the nightcap, in order to preserve the eyes, by hanging down over them. On the 10th or 11th day after inoculation, or the third from the beginning of the fever, the pustules begin to break out by degrees, and at their eruption both the fever and other symptoms cease: the patient is then free from all danger, the incised wound begins now to discharge a great deal of matter, and most of all when the pustules begin to dry; for they grow by degrees, become yellow, ripen and scale off, so that all is over by the 18th or 19th day, and

* One must not be too forward in judging by one or the other of these signs only, that the inoculation has succeeded; in this point Professor *Gatti* was mistaken, who concluded from the redness and suppuration in the wound only, that the Dutchess *de Boufflers* would for the future be secured against the *variolous* contagion. She got a natural small-pox two years and a half after that,

the patient has seldom a single scar left after it; rarely any suppurative fever appears at all, unless the pustules are in a greater number; in that case it may easily be subdued by a gentle purge.

The patient ought to keep the same diet as is above prescribed *, and wants no other medicines than gentle purges, in case he should not have any stools by the effect of nature; he may likewise walk about in the room, but must take care not to use too great exercise, especially not to move the arm much on which the incision is made, or to squeeze it much by a tight dress, for that will cause the arm to swell, grow red and full of bladders: such an accident may however easily be remedied by a purge, and by applications of an unguent of litharge mixed with *flores Zinci*.

The incision does not heal up so very soon, for in the same proportion as the pustules ripen, this wound grows dilated; it is however seldom longer than the incision was made at first, but sometimes shorter; it likewise discharges at that time a great deal of matter, which has the same appearance as the *pus* in the pustules; therefore we leave it to run as long as it chuses of its own accord, and dress it with dry lint when the discharge or the swelling is too great; it remains open in some for a couple of weeks, in others it is cured sooner.

* By the narratives directed to *Colleg. Med.* we find that an alteration in the diet may be attended with bad consequences (see *p.* 14, for the year 1765). Professor *Bergius* inoculated two children of a gentleman, and their servant girl at the same time; the former had a favourable small-pox, but the servant girl got a very severe kind. She confessed her having eaten sily salt herrings, pork, and such other things, both before and after the inoculation. *P.* 255, in the same narrative, is mentioned by Professor *Acrell*, with what difficulty a noble young lady was recovered, after having eaten spinage stewed in a copper vessel which was not well tinned. The cause would not have been discovered, had it not been for her governess and servant woman being sick from the same circumstance, and at the same time.

In case the inoculation does not succeed, but the scratch heals quite up without being open again in six days, it shews that the patient has either had the small-pox or never will have this disease, or that the thread for this inoculation has been too old or worn off, or the variolous matter washed off by the blood. In that case we ought to inoculate him again, in order that he may not in the mean time receive the natural infection. It is attended with no danger to do this immediately, though some wait till twelve days are past.

We need not be alarmed though the inoculated person should not fall sick at the usual time. Professor *Swencke* inoculated a youth thirteen years of age, who was an only son. On the fourth day he felt as it were a trembling in the left arm, for the incision was performed in that arm only. A crust already covered the wound; on the sixth day he felt a smart pain in the arm and in the armpit; the fever began on the eighth day, which increased the ninth, with a head-ach and a pain in the back, and reachings and sweat. These symptoms were only of a few moments duration. On the tenth day he had a slight bleeding of the nose; no small-pox as yet appeared. His father grew uneasy. Dr. *Swencke* found at last on the twelfth day, and after having wiped off the *pus*, five true pocks near the wound and on the edges of it. He nevertheless applied a new variolous matter into the wound the same night. The next morning the patient had in the face, loins, and on one of the knees, in all four pocks more, which together with the former, rose, ripened, and scaled off. The inoculated wound discharged a great deal of matter for twenty-four days; and the cure was entirely performed. Here we plainly find that the variolous matter which was applied last, did not cause any effect at all, for in that case a new fever would have ensued on the seventh day, and a new eruption afterwards, which however did not happen. Besides, we perceive that the fever which arises from the inoculation does not always happen at the same time. Four children at *Stockholm* were inoculated at the same hour and with the same matter; nevertheless one of these had the fever two days later than the others. The small-pox did not break out sooner than after a fortnight on the daughter

daughter of Lord *Dalkeith*, and not till after twenty-six days on a foundling; but such instances are rare. This last had already been infected with the measles. It was nevertheless successfully cured of both these diseases, first of the measles, and then of the small-pox. On Miss *De Grave* the variolous fever, after the inoculation, did not appear sooner than after eleven weeks, but she was during that time not very healthy. See several such instances in *Kirkpatrick*, ch. i. p. 102. It is however better when all happens tolerably early.

Nobody ought to be allowed to wait on the inoculated who is not quite certain they have had the small-pox. Lady *Criseney* nursed her own children when they were inoculated, as she thought she had had the small-pox before; but she got infected and died. The same fate attend Lady *Vierville*, who visited the Duchesse of *Orleans*, when the young princess had the small-pox by inoculation. See *de Foigny*, ch. i.

If the bleeding be neglected in a plethoric person, he will be liable to red eyes, and a kind of scarlet eruption, resembling that of the *erysipelas*. A great number of pustules are sometimes observed as it were breaking out, but the greatest part is dried away within a short time, and only a few ripen and stand their time. Fat children do not get a greater number of pocks than those who are lean; but those who have a brown complexion are said to be liable to have more than those who are fair.

With respect to the fever, seldom any thing will be required but tea and whey. In case the fever should be severe, we may bleed the patient, and inject a clyster. In case we chuse to get any thing from the shop, we may prescribe a cooling *emulsion* with a little *nitre* in it, and give a tea-cup-full of it every two hours. However, we ought to prepare and get only a little at once of this, for it acquires the smell of *aqua fortis* by being kept some time. The cooling draughts which are recommended in the *Chapter on Ague* are also good, or the patient may drink cold water and sit up. But the best of all is found now to be a purge which is quick in its operation, (as was recommended in the chapter on the small-pox): this we

ought to give on the second or third febrile day. The violence of the fever will abate as soon as the patient has had some stools by it; and the eruption succeeds, but frequently so gentle and slight, that the patient doubts himself of its being the small-pox. Nevertheless he is secure from this disease for the future, for when such have been inoculated a second time, the contagion has not succeeded. *Affessor Bierchen* inoculated a young gentleman who was twelve years old, and of a plethoric and reddish complexion, and a bad temper. He fell sick the usual time, but the fever was very violent, his face of a blood-red colour, and so profound a drowsiness attended it, that it nearly resembled a lethargy; one was obliged to take him by force out of bed and put his cloaths on, and lead him along in the chamber: cooling remedies and clysters were administered; the fever continued with equal violence; but after having taken of the before mentioned powder of *Cremor Tartari*, and *Jalap Root*, and it having procured some stools, the patient was quite relieved, in such a manner as if he had not been sick at all. The eruption was so insignificant and slight, that the Doctor apprehended the patient liable to a new contagion, therefore he innoculated him again after two months with entirely fresh *pus*, and according to the method of *Dr. Dimsdale*, but the infection did not succeed.

If the inoculated person gets a shooting pain under his breast, has a head-ach, red cheeks, and a tickling in the nose, it shews that he will be affected with a *hæmorrhage* at the nose, which ought not to be stopped, unless we plainly perceive it to be too violent, so that it would weaken him. In that case we must apply a piece of linen in the nose made up in a little roll, on which has been spread a mixture of alum and the white of an egg rubbed together. A clyster injected will alone gently relieve, as the patient who bleeds is commonly costive.

The vomiting ought to be stopped in case it is too violent. This may be effected by a clyster of the common sort, or by some small bags filled with *mint* and some *saffron*, and applied to the stomach, after having been boiled in wine, and squeezed out; or we may drink some warm water: the vomiting will cease
of

of its own accord as soon as the pustules are quite broke out. When children fall asleep during the fever they commonly dream much, and awake in an alarm and a fright, especially if they do not see the person who sat at their bed-side when they fell asleep; their fright and alarms are banished as soon as we speak to them.

A delirium portends no harm, it goes off soon by a bleeding at the nose, a powder of *camphire*, or a clyster. The under lip trembling, shews that a puking or a *nausea* will come on.

If the child has been before affected with convulsions, or the dentition happens at the time of inoculation, it will easily get convulsions again, either the first night of the fever, or rather a little before the eruption. This denotes in general a favourable small-pox, is productive of no harm, and may be relieved by a clyster; a *camphire* powder will be seldom wanted; or one or two grains of *musk* rubbed with ten grains of sugar, and given as soon as the patient can swallow *. If the patient be uneasy, restless, tossing and agitating his body much, we may give him a little *syrup of poppies* towards night, or some of the *elixir paregoricum* well mixed with some syrup, especially that which is made from the *Norlandic berries*.

If the child be weak, and the pustules will not turn yellow and ripen well, we may give some bark every third or fourth hour, agreeable to the advice given in the chapter on the Small-Pox and Ague.

When the small-pox is dried up and scaled off, the patient ought to take gentle purges six or seven times every third or fourth day. He ought likewise to abstain from much nourishing food, as he otherwise might easily contract an eruption on the arms and legs, breast and back, which itches, and on being scratched,

* When Doctor *Ingenhousz* was in Vienna, it happened that a child he had inoculated had the convulsions. He hastened to open the window, and held the child out of it; the convulsions ceased instantly. This case I got by a letter from Vienna, from a person whom I can depend upon.

discharges an acrid lymph. It would be of service to let children afterwards drink a ptisan of *radix Chinæ*, mixed with a little milk, and continue it a fortnight. Older persons ought to drink a decoction of *guaiac*, likewise diluted with milk*.

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* I ought [to answer a great objection made against the inoculation of the small-pox, before I finish the treatise on it. Some have pretended that the contagion is conveyed to other families either by the persons inoculated, by the physicians, or by those who attend upon the inoculated; and consequently thereby occasion the small-pox to rage more frequently in a place than it otherwise would. This argument will soon drop, if we consider that the spreading accounts of it have been false. The contagion in the year 1722, and in the months of *April* and *May*, did certainly not arise from the inoculation, as that was first performed in the month of *August*. The contagion at *Paris* 1762, was not raised by inoculation, for this operation was first made there in the year 1763. See *De Foigny*, ch. i. It is not found that any contagion has been conveyed from the hospitals of inoculation in *London* or *Stockholm*. Nor have we any instance of that kind from any of the other parts of *Sweden*, where a great number have been inoculated; neither from *England*, where the inoculation has been performed on several persons, in these latter years. For, during the disease, nobody is admitted into the patient's chamber who has not had the small-pox before. We now act more cautiously than they formerly did in *England*, when the inoculation was at first introduced. Six servant maids were there admitted to Mr. *Batt's* children, caring them frequently during the course of the disease; all six were infected and one of them died. See *Kirkpatrick*, p. 119. As soon as the disease is over, the room and clothes of the sick are washed and aired, the doors and windows kept open, and the scales of the pustules are burnt. It has never been heard of that any one has caught the contagion in the open air. The pocks after inoculation are always less in number, consequently they exhale less contagious vapours. As to the physicians who visit the inoculated, every one ought reasonably to have more honour and conscience than to spread the infection, they being bound both by the nature of their office and their oath, to preserve and not to injure mankind. If they, during

The contagion of the small-pox may likewise be propagated by applying on any part of the body, either the variolous *pus* only, or some dry crusts of the small-pox; they should be put next to the skin, and covered with a plaister, in order that the variolous matter may not go off by exhalations, but be constrained as it were to enter into the body through the pores. In order the better to rub in the matter, we should mix it with some pomatum or unguent, taking care not to mix *camphire* in the ointment, as that would destroy its power of infection. This kind of inoculation has likewise been successfully employed both in *England* and *Leipzig*. The following *cases* happened in *England*: A man had a very handsome daughter ten years old, whom he loved tenderly; he took some variolous *pus*, mixed it with pomatum, and spread it on the inside of his daughter's gloves, on the places which correspond with the interstices betwixt the thumb and

ing the time, visit other families besides those inoculated, they never should neglect to shift their cloaths entirely, nothing-else will be required. His Royal Majesty, our most gracious Sovereign, has likewise this confidence in the physicians in Sweden, for which reason he has been pleased to order that all inoculations should be made under the inspection of a doctor of physic. The nursekeeper, or the attendant on the sick, ought likewise to wash and air his cloaths before he leaves the house where he has been attending. When such precautions are taken, we may be pretty certain that the contagion from the inoculated person can never be conveyed from one house or place to another. But if imprudent and daring youths should suffer themselves to be inoculated, and then walk about in churches, companies, see plays, &c. and brag that they have been inoculated, they would strike a dreadful terror, especially in those who have not yet had the small-pox; such abuses would make inoculation prejudicial, in case there were not means to prevent them. Every one has a right to use a remedy by which he may preserve his life, provided it does not endanger that of his neighbour. Letters from *Paris* hint that something of that kind happened there, which obliged the Parliament to ask the opinion of the *Sorbonne* and the faculty, whether the inoculation of the small-pox ought to be allowed or not.

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the fore-finger, and betwixt that and the middle one. She had a gentle fever on the eighth day, and the pustules broke out on the eleventh, being very gentle, and leaving scarcely a scar. In the transactions of the Royal Academy of Sciences for the year 1756, Professor *Bergius* relates the following case: A child who had a lethiferous small-pox was suckled by its mother during the disease, but on her breast only. The mother was thereby at last infected, but her disease was benign, the pustules being crowded around her left nipple only; some few broke out in the face, but only a single one on her body. The infection has likewise been caught by touching with the hand, or on feeling any one sick of the small-pox.

It is either by the one or other of these instances that the variolous contagion is conveyed from one to another; as nobody ever gets the small-pox but by infection, every one will find that those are most fortunate who catch it when the body is well prepared beforehand.

C H A P. XIV.

On M E A S L E S.

TH E measles are commonly so gentle a disease, that few children die of it if they otherwise have a good nursing, and no disorder of the breast previous to it. Nevertheless there are instances of its having raged with such violence that almost every individual affected by it lost their lives. This is the reason of the ancients having called it *Morbilli* in Latin, or the little Plague. I imagine the measles to have been of the same bad kind, which carried off so many children at *Stockholm* in the year 1713. A similar, if not a worse kind raged at *Vienna* in the year 1732, when the greatest part of the persons affected had a gangrene in the throat, and died on the third or fourth day. Also this sort of epidemical disease, which was spread in *London* in the year 1762, in the autumn, must have been very lethiferous, as about three hundred persons died of it weekly. The
measles