

**A fact in the natural history of children, hitherto unobserved; which explains much concerning infantile diseases and mortality.**

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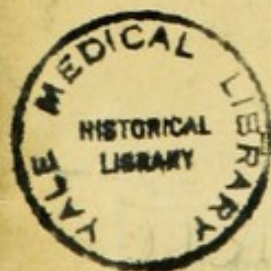
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A FACT  
IN  
THE NATURAL HISTORY  
OF  
CHILDREN,

HITHERTO UNOBSERVED;

WHICH EXPLAINS MUCH CONCERNING INFANTILE DISEASES  
AND MORTALITY.

BY JOHN GARDNER, SURGEON.



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A

## RECENTLY DISCOVERED FACT

CONCERNING CHILDREN.



THE design of this tract is to make known to the profession, and excite the attention of the public, to a fact in the *natural history* of children, which answers the following inquires :—

1st. Why so large a number perish ?

Statistical writers inform us that of every 100 born, 45 or nearly half die before reaching the age of 10 years ; in other words, five times as many of our race die within the first 10 years of their existence, as in any after period of the same duration.

2d. Why some children are more prone to suffering than others ; and why there is more difficulty in restoring them to health when affected with slight complaints ? why they are more liable to die of ordinary diseases ; inflammations, hooping cough, measles, scarlet fever, &c. &c.

3d. Why so many of the lost are robust, fine-limbed children ? why usually the most interesting ; often the only child ? Why several of the same family ?

4th. Why head diseases and convulsions are so prevalent and so fatal ; and why they often supervene upon other diseases ?



It is necessary to explain that this tract is abridged from part of a work, which has occupied much of my attention for several years, "On the Causes and Prevention of Disease and Death in Children." In that work, the facts here only briefly *announced*, are *proved* and *illustrated* by much concurrent testimony, and numerous cases. The whole subject of the treatment of children's diseases, together with the modifications my own experience enables me to suggest, more especially in the instances touched upon in this tract, will therein be fully explained. If any apology be deemed necessary for the present publication, I trust it will be found in the subject itself, which may be as easily comprehended by an intelligent parent, for whom indeed it is chiefly designed, as by the profession. To the latter, this will explain the introduction of the *preliminary* matter, in which there is little new to them, and the absence of any remarks upon the treatment, which however I shall feel most happy to communicate to any one whom it may interest. In conclusion I would emphatically express my conviction, that a candid and patient examination of children, both in health and disease, will convince the reader, of the truth and importance of this contribution to the stock of medical knowledge.

JOHN GARDNER.

49, GREAT PORTLAND STREET,  
June, 1838.



## PRELIMINARY.

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Sec. 1. The principal physiological difference between a child and an adult is, that the former is in a state of rapid development or growth. The new-born infant, when of an average size, is not more than one-thirtieth part of the weight it is destined to attain in becoming an adult. The process by which this full stature is reached, is not a steady and uniform increase of the whole body and all its several parts, from birth to maturity; but some of the organs of which it is composed are at first perfect, whilst the germs only of others are to be found at birth; which germs are successively developed at the time they become needed in the economy. The *rate* of the growth of the whole, and the *order* of the expansion of its several parts when not interrupted by disease—like all the processes of nature—follow definite laws. A familiar illustration of these laws, is to be found in the teeth, which first project through the gums, at the eighth or ninth month, at the time a change of food is desirable to the system. These teeth again are removed by a vital process at the seventh or eighth year, to be replaced by a stronger and larger set—the germs of which had long existed—when the growth of the jaws has made room for them. Similar changes pervade the whole body from birth to maturity.

2. The human body is made up of a congeries of organs, fitting it for the numerous functions or offices it subserves; and these are divisible into certain systems or groups which are combined in the performance of a par-



ticular function, or set of functions; whilst all these systems are mutually intermingled with, and subservient to each other—and to the whole. Thus, there is a digestive system, or group of organs to receive food, and to convert it into suitable matter for building up and repairing the body. There is a circulating system (the heart and blood vessels), to convey the nourishment to all parts, and keep in perpetual motion the fluid (blood) which forms the *material* communication of all the parts of the body. And there is the nervous system, the immediate seat of mind—of sense—of all feelings—the primary source of all the motions and actions of the body; the *vital* communication between its several parts.

3. The nervous system of the human body consists of the brain, the spinal chord, and the nerves. The matter of which it is composed, appears to the unaided eye, a reddish white, soft, opaque, homogeneous pulp; but under the microscope, it exhibits a proper organization; consisting of minute globules arranged in lines, having the appearance of fibres. This matter—the seat of the mysterious attributes of life—is encased in proper tunics for supporting it, and giving it certain forms according to its situation and office. The BRAIN is the root and centre of the whole, is situated within the skull, and its mass in the adult weighs nearly four pounds; from it proceeds the *spinal chord*, down the back, through the spine, and from both brain and spinal chord offsets termed *nerves* pass, and pervade every part of the body. Every motion of the limbs or other parts, every feeling, every action, requires a communication by a nerve with the brain. If any part of the body be separated from its connexion with the brain, it loses its office entirely. Distinct nerves spring from the brain and spinal chord, endowed at their roots with distinct properties; and if injuries be inflicted on the brain, distant parts are affected in different ways, according to the



part injured ; feeling is lost, or painfully increased, motion is destroyed, or irregular motions not controlled by the will (convulsions) excited. From these facts—but there are a multitude of others of the same tendency—the pre-eminent importance of the brain in the animal economy may be understood.

4. The brain is one of those organs which are very imperfect at birth ; but it nevertheless becomes, to a certain extent, perfect much earlier than the entire body. This may be shewn to a limited extent, by the rather gross comparison of its weight at different ages. Thus, the average weight of the brain at birth, has been found to be about 13 ounces ; at the end of two years 23 ounces ; at six years,  $36\frac{1}{2}$  ounces ; and in the adult, from 50 to 60 ounces. It is generally believed by physiologists, that the full *magnitude* of the brain is attained about the age of ten or twelve ; but its *weight* may afterwards become greater from an increase in its density. The whole body, as observed above, becomes thirty times as great as at birth, whilst the weight of the brain is only quadrupled ; and of this increase, the greater part is accomplished within six years, by which time it has tripled its original weight.

5. Corresponding with the rate of its growth, is the development or assumption of its powers and offices. The instinctive actions of sucking and crying—the vital impulses to the organs of nutrition, circulation, and secretion, being necessary to existence, the brain is adapted to their exercise. The sensations of vision, taste, smell, hearing, and touch, of muscular states, and the power of controlling by the will the muscular actions, come gradually into play. The preparation of the future mind proceeds in order ; certain associations are indissolubly established between the different sensations, before the power of recording impressions, or the consciousness of passing feelings, comes into action. In due time, recol-



lection, memory, the faculty of speech, the power of walking, and other less obvious functions, become successively developed; all requiring the gradual and orderly growth of the brain until its completion in size marks the attainment of all its faculties, which require but due culture and exercise, to achieve all the mighty workings of mind.

6. The liveliness of sensation, quickness of action, and restlessness of children, mark the peculiar character of their nervous system. Their sensibility, though acute, is transient; their activity of limb springs from a ready and rapid flow of nervous influence from the brain to the muscles; and from the same principle arises the readiness with which sympathetic affections of distant parts occur in most of their diseases. Hence it has been often said that the characteristic of the infant temperament is *nervous*. This is correct, but when it is further inferred that there is a corresponding susceptibility to morbid impressions, and remedial influences, experience will not warrant the inference. Nothing indeed can be more obvious, than the differences that exist in different children, in their excitability and susceptibility to suffering, from various causes. Some, with all the characteristic quickness of action and nervous constitution of childhood, are no more obnoxious to disease than adults; whilst upon others, not a breath of air can blow, nor the slightest cause impinge, without arousing their latent morbid tendencies, and their brief span of existence seems marked throughout with every mode of pain and suffering.



## THE SUBJECT.

7. Three propositions will now render intelligible the fact which is the especial subject of this tract:—

1st. The gradual—equal—or rather normal development of the brain, is essentially necessary to a state of average health and *vital* strength, in the constitution of childhood.

2nd. Anirregular—unequal—accelerated—ABNORMAL (or disordered) RATE OF GROWTH OF THE BRAIN or any part of this organ, gives a peculiar character to a child's constitution, rendering it vitally weak, susceptible of morbid impressions, and an easy prey to ordinary diseases.

3rd. Such a condition of the brain is widely prevalent among children, and is TRACEABLE IN THE EXTERNAL FORM OF THE HEAD.

That a great variety exists in the form of the head is well known; that *some* changes *do* take place in individuals has been slightly noticed, but the extent and rapidity of these changes, the peculiar character of those varieties, their bearing upon the constitutional state, their pathological relations have never, so far as I know, been investigated.

The explanation given by the Phrenologists of such of these phenomena as have come under their observation, is erroneous. If the protuberances of the infant's head denoted the possession of various mental faculties, the mind must be constantly fluctuating in its powers and properties in certain individuals; but of this we have no evidence. On the other hand, the expla-



nation now to be given will be found inconsistent with the phrenological hypothesis.

Considered pathologically, the abnormal growth of the brain constitutes a morbid predisposition or diathesis, not properly speaking a disease, *i. e.* not necessarily exhibiting symptoms of present suffering; of active functional disease, or rapid change of structure; but a state of susceptibility or *proneness* to disease; not however such an aptitude to *any* disease as proceeds from mere debility, but a source of peculiar changes and symptoms accompanying *every* disease, and particularly the origin of an especial group of diseases referrible to the head. Several diatheses or predispositions bearing a certain analogy to this, in their consequences upon the course of diseases, are well known; such as the scrofulous, gouty, and consumptive *habits*, and some others. A hydrocephalic diathesis has lately been spoken of as probable, but the organic constitution of the brain now described, has never been recognized as its basis or cause; nor has it ever been attempted to connect that predisposition with the many other known affections of the head, or with the numerous incidental abnormal phenomena presented by children's diseases, which this fact concerning the growth of the brain associates, by assigning them to a general principle, or rather, by referring them to a common basis.

The existence and influence of such a state of brain, and the phenomena by which its presence is recognized, I have ascertained by a strictly inductive process.

The diversity existing between different children, in their susceptibility of morbid impressions and the influence of remedies—facts known to everybody—induced me, many years since, to endeavour to ascertain if there were any circumstances in the constitution of those children which were the most unhealthy, besides the known morbid habits of body, such as scrofula, rickets, &c. Whether there was, in fact, any similar or analogous state



not recognized, existing in unusually susceptible children, and which could not be found in children enjoying an average state of health. By observations upon every family, and indeed every child within my reach, I detected the common fact, of the diversity of form assumed by the growing head of the susceptible children, from that of the healthy, and determined the direction of the deviation from a healthy development hereafter described. The testimony of every medical writer upon the most prevalent infantile diseases, and the most important complications of *all* the diseases incident to childhood, shew that they have a close relation to the brain and nervous system; and thus I became assured, that the nature of the peculiarity could be no other than that which I have endeavoured to express, in the above three propositions. The general fact involved in them, satisfactorily elucidates most of the obscurities hanging over the whole group of cerebral diseases, and most of the fatal complications observed in other diseases.

The most appropriate term by which this condition of the brain may be designated, is *Kephalosis*,\* from κεφαλη, 'the head,' morbid head. The signs by which this state of the brain is recognized being manifested in the external form of the head, although with certain concomitant marks in the general system.

### *Signs of Kephalosis in the Form of the Head.*

8. The head is composed of eight bones, so shaped and disposed as to form an encasement for the brain. At birth this case is incomplete, the several bones being

\* It ought rather to be *Encephalosis*, "morbid brain;" but this word has already been applied, although improperly, to a tumour resembling only in its form the convolutions of the brain.



loosely attached to each other, with large spaces, six† in number, between them, filled up only with membrane, so that external pressure causes them to overlap each other. Soon the expansion of the brain brings the bones into their places, and they are afterwards moulded upon it, enlarging their capacity and taking their shape from the brain as the growth proceeds. The largest of the six spaces, situate at the upper and fore part of the head, is called the anterior fontanelle, and at this part we can feel the pulsation of the brain, and ascertain its vascular state for many months after birth. The time of its closing varies in different children; when however it is long protracted, the *open head* indicates certain definite, morbid predispositions; and in connexion with other signs, the particular one we are contemplating. When the head closes, however, all the connexions of the bones are still loose, and readily yield to the pressure of the brain within, with a facility, which diminishes as the age increases; but it is not usually, until old age, that they become wholly incapable of change from internal pressure.

9. Such a construction then of the bony case readily allows the detection of any swelling, projection, or enlargement of the brain; and careful and repeated examinations of the heads of children will soon satisfy the inquirer, that this organ is subject to irregular expansion. The growth of one portion proceeding more rapidly than another, causes some part of the head to protuberate. Sudden changes in the quantity of the blood circulating within the skull, or in the activity of the circulation, affect only the fontanelle, causing it to be more or less elevated or depressed. But a progressive, yet undue growth of any part of the brain, produces a positive projection of the bones themselves, and thus affects the

† The four lateral fontanelles are supposed to close much earlier than they do in fact, as a reference to the skulls of children will prove.



symmetry of the head. These irregularities in its form, even when slight, will be easily detected by a practised eye; but when the development has proceeded to an important extent, a mere casual observer will perceive it. The most marked and striking change of form, is in the outline presented by the forehead, which the following cuts illustrate.



Fig. 1.



Fig. 2.



Fig. 3.

The overhanging of some point of the fore part of the brain beyond the lowest point,—the situation of which is marked by the root of the nose,—is always an indication that the brain is undergoing an abnormal development (a construction seen in the cuts, which are accurately drawn from nature). The dotted line in Fig. 1, indicates the form which a healthy head always exhibits. The lowest point of the anterior lobes of the brain is always most forward, in a condition of perfect health; and the line of the forehead makes either a right angle, or a slightly acute angle with it. If that line forms an obtuse angle at this point, kephalosis exists; and the forms of the bones, their connexion, and relation to the fontanelles are such, as to lead most commonly to this deviation from the healthy outline of the forehead, at whatever part of the brain the accelerated growth is proceeding. This however, it is important to observe, is not an invariable effect, many cases will be met with



where there is a morbid projection of the sides, or of the posterior or hind head. The annexed wood-cut, Fig. 4, represents a case of this kind.



Fig. 4.



Fig. 5.

In Fig. 5, an extreme case is represented, the shape of the head being excessively irregular. It is an accurate portrait of the head of a boy, the only surviving child of a large family—all the rest having died of head diseases or other affections complicated with head symptoms. This was the first child of the family which I saw; and from the parents' history of the former children, I inferred the probability, that the tendency of this child would be to a morbid growth of brain, although as I saw it within a few days after its birth, it was not yet traceable. By thus foreseeing its tendencies, and meeting every, even the slightest deviation from health, upon this principle, his life has been preserved, and he is now a promising boy eight years old, although the kephalosis has been so remarkable, and the early symptoms of acute brain disease have arisen very frequently. This drawing was made when the head was beginning to take on a healthy form two years ago. At present it is still more nearly approaching the proper standard.

Another child, born afterwards of the same parents,



exhibited at the age of six months the same morbid form of head, but it was neglected, and suffered from spasmodic croup. Being in the country, it was attacked with inflammation of the lungs, and treated without reference to the head ; whilst convalescent, head symptoms supervened and proved fatal. Such I believe to be the fate of hundreds of children, which might have been saved by the recognition of the organic predisposition before us.

The only error which a non-professional observer can fall into, in judging of the existence of kephalosis in a child, is mistaking a rickety head for it. In rickets, there may be an irregularly shaped head, which depends upon the bones themselves ; but the child will have thickened joints, and other signs of that disease, which form a striking contrast with the constitutional condition of those children having the state of the brain here treated of.

Equally diverse from kephalosis is the strumous diathesis. This has always received so much attention from medical writers, and is known to produce so many peculiarities in the course of diseases, that other causes have not been sought for. This may explain the reason why kephalosis has been overlooked. Yet all the peculiarities arising from struma, could I here detail them, would be found only remotely analogous to those characterizing the morbid head.

The age at which kephalosis most prevails is from six months to two or three years ; but it may occur at any time from birth to the tenth year, beyond which age my observations upon the changes in the form of the head do not extend. Parents who have sickly children, who have lost a child, or who are anxious to preserve those they possess, will do well to direct their attention to the form and growth of the head at the earliest period, and they will thus be able to discover their tendencies while there is time to avert the danger.



*Signs of Undue Development of Brain, concomitant with the Changes in the Form of the Head.*

10. The integuments and skin of the head in these children have a smooth stretched appearance, and a deep flush follows every slight excitement. The veins are larger and more distinct than usual about the forehead and temples, and easily become full and turgid—as in crying; the head is apt to become hotter than the general surface, and is often bathed in perspiration, especially at night; the hair is frequently redundant and strong, but sometimes it is very deficient.

The fontanelle or open part of the head is large, its edges thin and stretched, and it varies its state of elevation or depression upon slight causes.

The mind of these children is generally premature, their affections lively, and temper quick and exciteable; these qualities render them more than ordinarily interesting. They are more than commonly wakeful, or sleep lightly and are easily disturbed.

Their muscular system is sometimes well developed, as shewn by fine limbs, and an early ability to walk—but this is when the brain does not deviate very seriously from a sound state,—more frequently and in severer cases the power of walking is protracted, the balancing power of the will being deficient.

A general irritability and exciteability of frame (often deemed characteristic of all children—but much more marked in some than in others, as all persons acquainted with children must have observed) is almost always associated with the condition of head above described. And looking at the offices the brain sustains in the system, there can be no doubt of its depending upon and flowing from it.

At the same time, it will be obvious to every physiologist, how an opposite set of symptoms may flow from a



morbid brain, dulness, heaviness, stupor, and a preternatural immobility; but such consequences are comparatively rare.

### *Consequences of an Irregularly-growing Brain.*

First, in Idiopathic Head Diseases.

11. It has been calculated that four-fifths of those who die in infancy fall victims to head diseases or convulsions. Of the great prevalence and fatality of these diseases there are few persons whose families do not testify; many of these cases too, it will be remembered, were at their commencement recognized as head diseases; but an equal number were at first attended for some other disease, either local or general, and the head symptoms supervened and proved fatal, to the surprise of both parent and practitioner.

The diseases of the brain, known to the profession, are HYDROCEPHALUS or water in the head; INFLAMMATION OF THE BRAIN; acute (or brain fever) and chronic; CONGESTION and COLLAPSE; CONVULSIONS, partial or general; PARALYSIS and SPASMODIC CROUP, or as it has been aptly termed, *crowing*.

It has been much discussed, whether these latter affections or even convulsions, *be* properly speaking brain diseases. They are often doubtless excited by local diseases in any part of the body; and after death no trace of morbid change can be found in the brain itself. But we know, from the function of the brain, its relation to the whole nervous system, and its controlling influence over the motory system, that the irritation of local diseases must act through the excited brain, to beget those inordinate muscular actions termed spasms and convulsions; and yet, as it is a mere action, we have no right to expect to find organic changes in the brain itself.

An interesting and valuable addition to our knowledge



of these diseases, and a great accession of power over them, will be found in the fact, that all the idiopathic diseases of the brain, together with convulsions and spasmodic croup, occur with incalculably *greater frequency* in children having abnormal growth of the brain, than in others. From our very nature, every human being, and a fortiori, every child is capable of suffering from these affections, and of being thrown into convulsions, if exciting causes of sufficient energy be applied to the body, such as great injuries and the like; but in children having the construction of brain above described, such diseases are brought on by trivial causes, slight disturbances of health which will be quite inadequate to their production in others.

12. There are many points in the history of head diseases totally inexplicable, before the existence and prevalence of kephalosis is recognized, but which are by it at once explained.

First, Their spontaneous origin. How frequently it occurs, that upon the accession of these diseases no satisfactory cause whatever can be assigned.

Secondly, The causes to which they are usually referred,—teething, common colds, over-feeding, errors of diet, and the like—variously affect different children; why they produce head diseases in some, rather than affections of other parts, or fever, as in others, becomes now apparent.

Thirdly, Why they supervene upon other affections is hereby entirely explained.

Fourthly, Head diseases, unlike most others, are convertible one into the other; usually the lighter affections first occur, slight local spasms, crowing, irritation of the brain, and if neglected, pass on into the severer forms, and these if subdued, very often pass again through the first, ere health is restored; a striking proof that they have a common basis.



13. It is not asserted that the abnormal growth of brain necessarily and infallibly destroys the child by these affections, because it may happen that a child, most readily thus disposed to suffer, escapes all exciting causes. The matter indeed is highly inflammable, but the torch is not applied. Nevertheless it must be evident of what great importance it is to be able to foresee the consequences of exciting causes in children, and to mark their tendencies before the emergency arrives. With this knowledge, my impression is, that the known head diseases, from being the *most*, will become the *least* fatal class of children's diseases.

The existence of kephalosis being consistent with a state of *present* health, the earliest symptoms of active disease will be anxiously looked for, and met with appropriate treatment. These symptoms, most frequently, are increased *wakefulness* or restlessness, fretfulness, feverish heat, especially about the head, tossing about the head, or uneasiness marked by the hands being frequently placed upon it; local spasms, as contractions of the hands or feet, squinting, a crowing noise upon awaking, or being excited, thickened speech, or some peculiarity of gesture. These signs, which are obvious enough to a parent, almost invariably precede the invasion of acute diseases, and are too often neglected, until they issue in inflammation or convulsions. When the decided tendency of a child to these dangerous affections, is known, by its abnormal brain, it must be the parents' own fault, if the precursory symptoms not being immediately attended to, the severer steps succeed, and the child dies.

There is a class of fatal cases not so obviously connected with kephalosis, which (did my limits permit) the history of many families could be adduced to prove dependent upon the same general cause, an originally weak brain. I mean the cases of children born so weak, that they survive only a few days or at most weeks, and then



perish of convulsions. There is not time in these cases to observe the growth of the brain to which their inherent tendencies lead, we can only infer the nature of their constitutional state, from such children being born in families, alternately with others who survive to exhibit the more palpable signs of kephalosis.

### *Consequences of Kephhalosis.*

Secondly, in various Diseases of Children.

14. The most striking, and at the same time most perplexing circumstance met with in the treatment of children's diseases, is the tendency which some children exhibit, of having mixed up with the symptoms proper to ordinary diseases, other anomalous, superadded, or irregular symptoms, which render the first disease more dangerous, or more obstinate in resisting the means used for its cure. The frequency of the occurrence of these *interferences*, as they may be termed, in the progress of diseases and the influence of remedies, has been noticed by all medical writers, and they are usually described as *complications*, and classed according to their supposed relations. Of these, complications of ordinary diseases with *head* affections are the most prominent, and they become satisfactorily explained when it is known that they occur in individuals having kephalosis. But there are many others of those peculiarities not so obviously referrible to the head, yet occurring in children affected with kephalosis, the exposition of which cannot be given, except in connexion with the full history of every known disease. The general principle, however, involved in them all, is, that kephalosis is associated with a want of power to resist morbid impressions, a looseness in the tenure of life, or a vital weakness; a low degree of that restorative power, upon which we depend in all our plans of treatment. This state of brain bears a faint analogy



to the weakness of life inherent in a vegetable prematurely developed by heat and moisture. Its influence certainly pervades all the diseases of childhood, although more manifested in some than in others, and demands therefore a corresponding modification of treatment. In common fever, bowel complaints, scarlet fever, measles, catarrh, coughs of all kinds, hooping cough, and in every inflammatory affection, kephalosis mingles some of its effects with the usual train of symptoms. In some instances the excited brain masks the symptoms of local diseases, so that after death changes of structure are found, where they were least expected; this would not happen, were the head symptoms seen in their earliest stage, and treated; for then the true nature of the exciting cause would be revealed. My space only allows a few remarks upon—

### *Dentition, or Teething.*

The true nature of the effect of this natural process upon the health and life of children, is much misapprehended. In a healthy body the teeth are always cut without suffering, and not far wide of the ninth month. The passage of the teeth through the gums produces a slight excitement, which is *not* a deviation from health; but if there be any part of the system weak, exciteable, or already diseased, then the excitement produced by teething affects the weak or diseased organ most injuriously. Thus if the lungs be weak, if a cough is present, or a cold is accidentally taken; if the bowels be disordered or unnaturally exciteable, or any part similarly affected; then the excitement of teething injures the affected part, and often kindles fatal diseases. So also with the brain. Teething is perhaps the most frequent *exciting* cause of active disease in this organ. When the brain is already preternaturally weak and excite-



able, in other words, affected with Kephhalosis,—*then* teething produces convulsions, irritation, inflammation, water in the brain, and the rest. Incalculable loss of life results from the use of the phrase, "*It is only teething*," applied to children's diseases. It serves to blind the eyes of parents, and it must be feared, often of practitioners, to the real danger, and to the neglect of real diseases; and the indiscriminate lancing of gums, with or without reason, must be pronounced worse than useless—*cruel*. When however the *teeth-cutting* is really producing excitement in a child, otherwise diseased, especially when affected with Kephhalosis, lancing the gums is indispensable; but it must then only be considered as the removal of an *exciting* cause, and the predisposition, or constitutional state, must be subjected to appropriate treatment.

15. It only now remains, that we should be able to refer the prevalence of Kephhalosis, to an adequate cause or causes; and this is evidently found in the transmission of an hereditary influence upon the brain and nervous system in children. It has often been observed, and never doubted, that all diseases of the brain and nervous system, in adults, are more prevalent now than they were formerly; diseases which are referrible, upon the whole, to an *over-worked* brain. Care, anxiety, habits of mental exertion, mental and moral excitement of every kind, weaken the nervous system; how far these prevail in modern society I leave the reader to determine. That a vital weakness should hence be transmitted to the offspring, is clearly a necessary consequence.

Innumerable circumstances, requiring a volume to detail, minister to the same end; late marriages, and a great disparity of years between the parents, may be particularized, as it is known that the issue in such cases is generally weakly.

Transient sorrow, or any vivid passion, certainly leads to the same weakness in the children born soon after; and



this explains very often, why some children of a family are exempt, whilst others are peculiar sufferers. I have seen many cases, where the Kephhalosis could thus be referred to an especial instance of grief in the parents.

A striking influence of temporary passions, upon a large scale, is mentioned by historians, namely, that after the bombardment of Vienna by the French army in 1809, a very large proportion of the children, born within the next few months, were attacked at the age of one month with symptoms of inflammation of the brain, or convulsions, and died.

But we may not be able thus to connect every case with its immediate cause. It is sufficient upon the whole, to be certain of its hereditary origin; probably in this as in other hereditary influences, sometimes passing by one, to affect the second generation; and in a similar manner, we often find several of the same family affected with diseases, obviously hereditary, although no trace can be found in either parent.

There *may* be a possibility of exciting Kephhalosis in a child not hereditarily predisposed, by too early stimulating the mind; not merely by beginning its education prematurely, but by making an infant an object of too much attention and interest, as in the case of an only child, or one which is deemed of more than ordinary importance. I have seen such cases, where the health, and prosperity, and happiness of the parents would seem to preclude the existence of such hereditary causes; nevertheless, there may have been mental inquietude suffered in secret, serious and severe enough to affect the offspring. "The heart knoweth its own bitterness." Certain it is that where there is already a strong tendency to the morbid development, it will be fostered and encouraged by such injudicious treatment of early childhood.



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