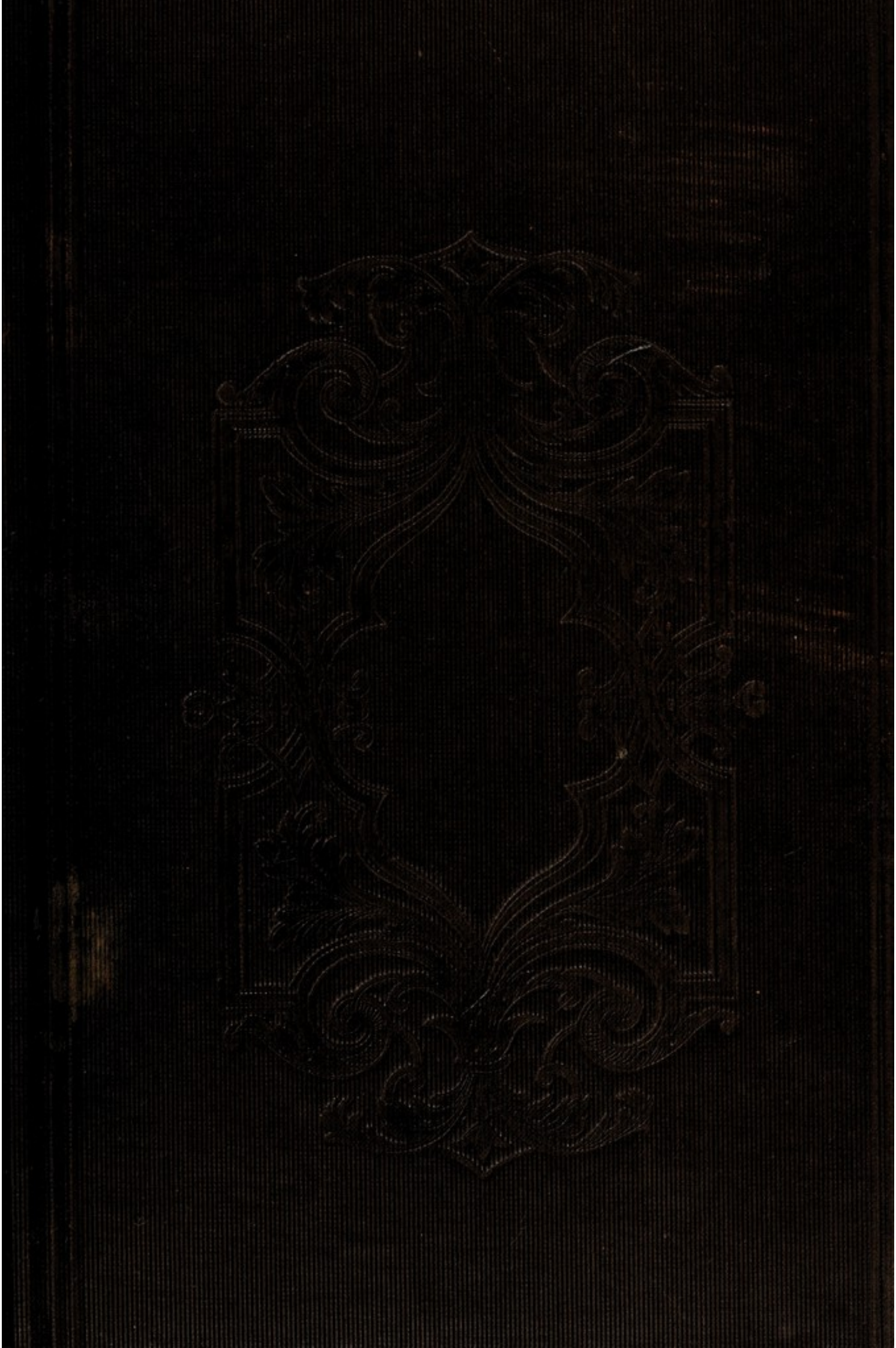
On the nature, causes, prevention and treatment of acute hydrocephalus, or water-brain-fever / [Thomas Smith].



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TREATISE

ON

ACUTE HYDROCEPHALUS.

EXPLANATION OF THE PLATE.

1 Transverse section of bath.

2 Fillet or ledge with channel for cold water (to enlarged scale.)

3 Perspective sketch of bath.

4 Plan of frame for oiled silk.

5 Longitudinal Section.

The same letters refer to the same parts in all the figures.

A Bath, or trough of wood, $\frac{3}{4}$ in. thick.

b Fillet, or flange, (shown at large in fig. 2) having a groove *c*, on its upper edge, for the purpose of conducting the cold water to the tap *h*.

C Cold water box or vessel.

d Plug, the removal of which allows the cold water to fall through the orifice at the bottom of the box, upon the head of the patient.

e Platform, or table, fixed on to the iron standards *l l*. This table has a square aperture in it, into which the box *c* is fitted, but the aperture being somewhat longer than the size of the box, allows the latter to be moved backwards or forwards, as may be required to bring the stream of water over the middle of the patient's head.

f A wooden frame, to the edges of which a piece of oiled silk is made fast, which, being secured round the neck of the patient, at once prevents the escape of heat and vapour from the hot water in which he is immersed, and also conducts the cold water into the channels formed in the ledges *b b* (and fig. 2) and thus to the cock *h*, whence it escapes into a vessel placed to receive it.

g Metal funnel prolonged to nearly the bottom of the bath, for the purpose of supplying additional hot water, if required.

h Cold water escape tap.

i Cock for emptying the bath.

k Curtains to be drawn round the patient.

l Iron standards supporting the platform and cold water box.

m Iron clips, or holdfasts, screwed to the bath, into which the standards slip.

n Brass or iron castors for the purpose of facilitating the removal of the bath.

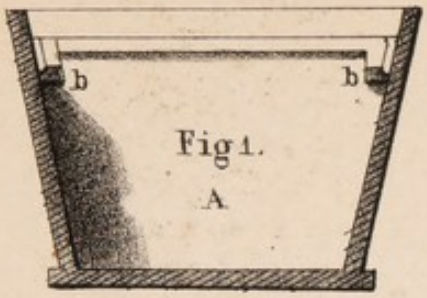


Fig 1.

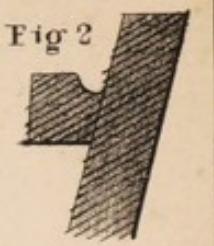


Fig 2

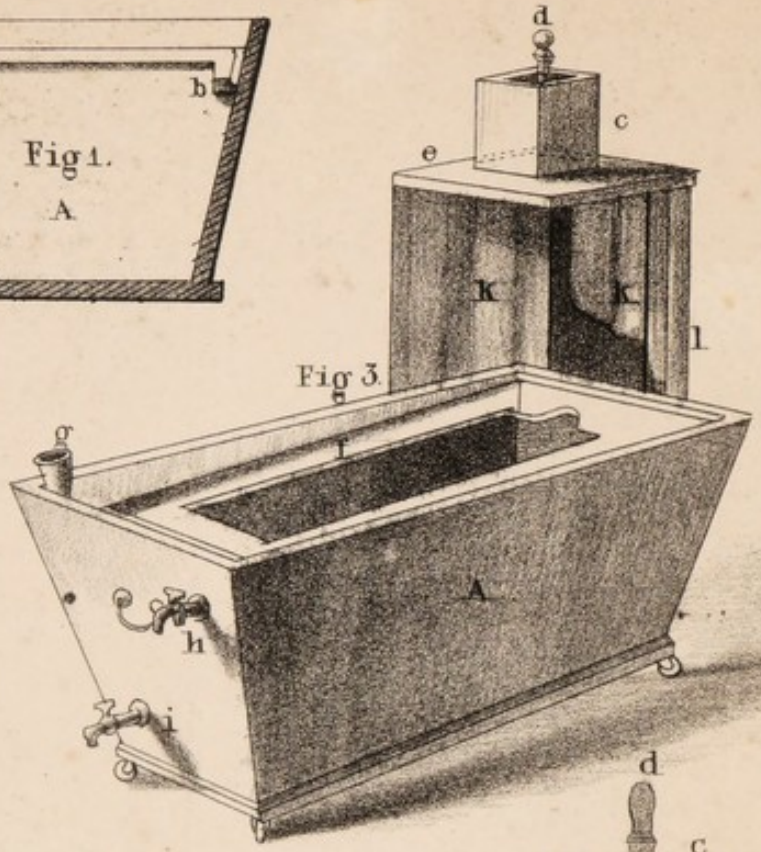


Fig 3.

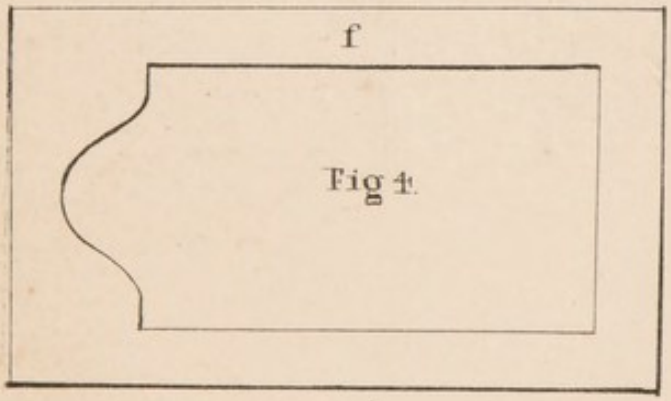
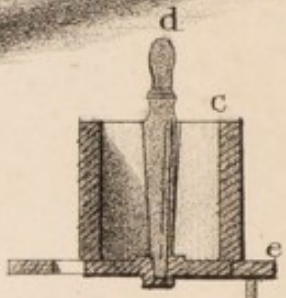


Fig 4.



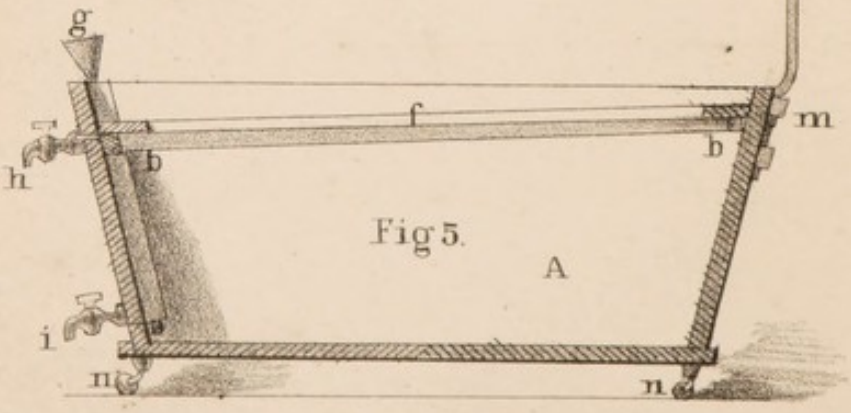


Fig 5.

J. F. Masser, Litho. Leeds.

ON THE

NATURE, CAUSES, PREVENTION, AND TREATMENT

OF

ACUTE HYDROCEPHALUS,

OR

WATER-BRAIN-FEVER.

By THOMAS SMITH, A.M., M.D.,

Senior Physician to the Leeds Public Dispensary;
Licentiate of the Royal College of Physicians; Member of the Royal College of Surgeons, London; Graduate in Medicine, and Master in Surgery of the University of Glasgow, &c. &c.

"Veritas est simplex, error est complex."

LONDON:

LONGMAN, BROWN, GREEN, AND LONGMANS.

1845.

EDWARD BAINES AND SONS, PRINTERS, LEEDS.

PREFATORY INTRODUCTION.

If a popular treatise on any malady or class of maladies be desirable, it will surely be so on one which, when once established in its most decided form, is generally admitted to be unmanageable and without hope. It is because Hydrocephalus is a desperate, and, but too frequently, an incurable malady, that, so far as I am able to form an opinion, it is of the utmost importance that the medical attendant, the parent, and the nurse, should be on the alert to watch the threatening signs of its insidious approach, and by a seasonable interposition of diet, regimen, and remedy, to oppose the mischief at its onset. It may be stated, without hazarding any doubtful responsibility, that this fatal and rapidly growing disease

may lead, my answer is, I have found medical and popular literature equally deficient in suitable admonitions to parents and nurses. I have found statistics telling us that one-eighth of infantile deaths in crowded towns have occurred from water-brain-fever. I have found my own profession, with regard to the disease in its least equivocal form, confessing the impotence of medicine, and physicians pursuing, as the result of habit, the same uniform, authorized, but unsuccessful treatment of the disease, as on a mere routine without hope, without encouragement, without comfort, and without consolation; meeting in consultation in such cases merely to reflect reciprocal humiliation, and to indulge in reciprocal confessions of incompetency. I have found them persisting in a plan of treatment in which generation has servilely imitated generation, and under which an occasional recovery has been more a matter of wonder, and occurring more from the intervention of some unexpected constitutional effort in the patient, than from any well directed aim of science.*

* The above remarks are equally applicable to that relentless enemy of mankind, pulmonary consumption. To show how little medical science has really accomplished in withstaying the devastation

In such a position, after duly weighing all authorities, and having had many opportunities of comparing my sentiments with those of my contemporaries, if I have determined to try to lay down a *beacon* or two, by means of which even a few lives may be saved, and much misery prevented, it ought rather to excite surprise that I have not long ago been anticipated in the performance of what may justly be called a duty of humanity, long neglected. And although others after me may perform the same duty more ably, and perhaps more successfully, I may at least claim to myself the credit of first pointing the way. Of this I am quite certain, when young parents have lost their first or second-born by Hydrocephalus, under self-management, and the

of this insidious invader of the human species, I avail myself of the recently recorded opinions of that candid, but highly gifted physician, M. Louis. After enumerating the various remedies which have from time to time been lauded as capable of effectually arresting the progress of phthisis and perfecting its cure, and having himself repeatedly submitted the same to the most rigid and impartial trial, he thus sums up his observations: "I have endeavoured to appreciate at their value the various means which have of late risen into notice, as possessed of the greatest power of effectually influencing the course of phthisis, or even of effecting its cure; and as we have seen, the best founded hopes in appearance, have one after another vanished before scrutiny." —*Louis on Phthisis. Second Edition: Translated by Dr. Walshe.*

regimen herein indicated, they may hereafter avoid a repetition of the calamity, and rear a family no longer "scarcely vital," and born but to perish untimely before efflorescence, but vigorous and adapted for longevity.

Nor must it be overlooked that, in adopting prophylactic measures to guard against the occurrence of water-brain-fever, we are also taking effective means to prevent the accession of a host of formidable maladies, originating in the same peculiar condition of the system,—the strumous or serous diathesis. Thus it not infrequently happens, that those who in infancy have escaped the fatal ravages of Hydrocephalus, have been unable to withstand the ruthless attacks of pulmonary consumption; and at a time of life most interesting, have fallen victims to a disease which, with unerring certainty, destroys those who, at a former period of their existence, were more especially prone to the development of Hydrocephalic fever.

Entertaining the views which I do of the nature of the disease, it may be objected to me that I should nevertheless retain the term Hydrocephalus. My motive for doing so is this. I consider that objections may, with the greatest propriety, be

made against all the terms which have been used for its designation, as there is not one which expresses its real nature. I consider it better still to continue to call the disease by the name of Hydrocephalus, as the word has become *a household phrase*, rather than to adopt a new one, which future research may prove equally unsuitable. As it is, in my opinion, so closely allied to the nervous fever of adults, I conceive the most correct designation would be to style it *febris nervosa infantum*, or *infantile nervous fever;* but for the reasons before stated, I should be loath to employ it.

In the present state of the medical literature of Hydrocephalus, I am only doing justice to a Latin publication* of Dr. Collier's, printed at Leyden in 1828, for having first directed my attention to the unsatisfactory state of the pathology of the disease, and for doubting its phrenitic nature. I have also to acknowledge the kindness of several gentlemen, in offering me various suggestions whilst writing this treatise. To Drs. Gregory, Ramsbotham, and Waller, and

* Dissertatio Medica Inauguralis de Febre Hydrocephalica.—G. F. Collier. Lugduni Batavorum, 1828.

to Mr. B. Phillips, I tender my best thanks. Mr. Thomas Pumphrey, Superintendent of Ackworth School, very kindly placed at my disposal some valuable statistics in reference to that institution, for which I feel myself much indebted; as also to my friend Mr. Compton, for the pains he has taken in the drawings and description of the revulsion bath.

That the verbal style of my work is neither elegant nor easy, I am as well aware as can be my most fastidious critic; for, as my first public essay, I have found it no easy task to record my views to my own satisfaction; but a sound reviewer will test it only by its utility to society, and to that test it ought to be submitted.

Leeds, April 15th, 1845.

CONTENTS.

"I confess I would much rather incur the charge of having twenty times supposed cases of Water in the Brain, by attacking what I consider to be the early symptoms, than once ultimately become a witness to this distressing scene, by neglect, oversight, or mistake."—*Dr. Yeats on the Early Symptoms which lead to the Disease termed Water in the Brain.*

A TREATISE

ON

ACUTE HYDROCEPHALUS.

CHAPTER I.

PREMONITORY SYMPTOMS.

Various diseases have been confounded under the term Hydrocephalus. If this confusion has long prevailed in medical science, no wonder that parents commit a similar error to a greater extent. An early writer enumerates six species:—1st, Water between the brain and its involucra or coverings; 2nd, Fluid effused between the pericranium and the bone of the skull; 3rd, Between the bone and subjacent membrane or dura mater; 4th, Between the pericranium and the skin; 5th, Into the temporal muscles; and 6th, Into the ventricles. Neither of the former five species are allied to that to which attention is now directed; and as to the latter, it may occur suddenly to infants in the course of the night, or it may supervene on teething, infantile pneumonia, remittent fever, and visceral disease, and yet not constitute true water brain fever, than which hardly any type

of disease is more distinct, or more susceptible of diagnosis in its ordinary course.

It does not appear certain how long a tendency to it may lurk privily in the constitution, prior to exciting the febrile symptoms with which it commences its tragedy. There is a manifest difference amongst authors on this subject. Dr. Whytt* mentions the case of a boy, who exhibited suspicious symptoms of the disease ten months before his death. Dr. Copland† says, "for several days, weeks, or even months, the child will be found to evince indications of the threatened attack." Guersent considers many years may elapse before the final acute or febrile paroxysm occurs.‡ Generally speaking, the experienced eye may have reason to suspect such a tendency for an entire year before the attack. Its progress, however, is usually more rapid. If the method of the schoolmen be admissible, by which they divide the phases of disease into one of morbid tendency or diathesis, a second of morbid action, and a third of morbid change of structure, the first of these would occupy a range of time greatly exceeding those of both the others; and in truth

* Op. Cit. page 35.

† Dict. of Practical Medicine.—Article, Acute Dropsy of the Head.

‡ D'autres fois des symptômes cérébraux, d'abord très vagues et très irréguliers, se reproduisent pendant plusieurs mois, ou même plusieurs années, avant que la méningite aigüe se déclare, et souvent même la période aigüe de la maladie arrive par degrés et d'une manière si insidieuse, que la maladie passe, pour ainsi dire, insensiblement de l'état chronique à l'état aigü, de telle sorte qu'il est souvent impossible d'assigner le véritable début de la période aigüe.—*Dictionnaire de Médecine, tome XIX.* Art., Méningite: Paris, 1839.

it is that, the first period, in which alone regimen and remedies promise any success. Hence the necessity of distinctly recognizing the first of these three different periods with the utmost care, vigilance, and discrimination.

The child which is about to become Hydrocephalic, loses energy of mind and body. The limbs become heavy and languid. The spirits flag. There is a growing timidity and inaptitude to motion and to speaking, and the child seeks to be alone, or shuns his former playmates. If old enough for daily walks, he becomes unable to go through the usual distance, and pettishly declines the attempt. The nose is irritable, aud he frequently rubs it. The bowels are irregularly bound or lax. The stools are clay-coloured, very often gelatinous, and resembling the jelly produced by boiling Iceland moss, adhering to the sides of the pot, and always offensive. There is frequent micturition, and the urine is generally passed in small quantity, of a bright amber tint; occasionally it is opalescent, nearly neutral, of low specific gravity, rarely above 1.012, and sometimes abounds largely with the phosphates.

The child seeks the bed earlier than usual, or is found asleep in a corner of the room, or even on the stairs. Weak and techy, an angry look or word overpowers him. There is a peculiar piercing expression of the eye, which parents frequently speak of as distressing, and of which they have a tender painful recollection long after the loss of such children. The eyes present a watery, suffused, or glazed

appearance. The eyebrows are frequently contracted. They falter in their gait, stumble, or inaccurately measure their steps. Gölis pithily remarks, that "in stepping forward they often raise the foot as if they were stepping over a threshold; they totter and stagger as if drunk." Occasionally they will complain of headache, or rather browache,—for the pain is chiefly felt over the forehead and orbits, and press the parts with their little hands. If a parent witness her son, when playing with his mates, withdraw himself for a while, and rest his forehead upon his hands placed upon a table or chair for a few minutes, until he have recovered the balance of the cerebral circulation, I know of no general sign more characteristic of the danger which it is my present business to caution them against.

Erratic pains of the limbs and body, slight and evanescent simulating rheumatism, tenderness of the scalp, and earache, fugitive contractions of the muscles of the face and forearm, are enumerated by some authors as the harbingers of the disease. The former of these symptoms are commonly the forerunners of all fevers, and, as such, are not of much diagnostic value. I have, however, repeatedly observed this malady to supervene on an attack of severe otalgia or earache, and am inclined to view the affection of the ear rather as an exciting cause of the disease, than as a sign of approaching Hydrocephalus.

When the flesh becomes lax, and the child prone to somnolency, our suspicions are always justly

aroused, as they are also with regard to infants in arms, if they contract the eyebrows frequently without crying, or clench their little fists and turn in the thumbs to the palms of the hands. These premonitory signs, as also the disease itself, are more frequent in spring and the latter part of autumn, or the commencement of winter, than in summer or winter. This disease, I believe, often appears as an epidemic, and is materially influenced by the state of the weather. Adult age is, for the most part, exempt from the malady, at least the exceptions are very rare.

Such are the precursory signs of Hydrocephalus. Any intelligent parent or nurse may remark the gradual change taking place in such infants. There is a marked diminution in their quantum of life and energy. They become paler and flabby, and the skin has a dry, harsh feel. There is frequently a puffiness under the eyes, with lividity of the lower eyelids. Their appetite is capricious; sometimes wanting, at other times exceedingly voracious. The abdomen is usually hot, tumid, and tender to the touch, and "occasionally there is manifest uneasiness on pressure in the epigastric and right hypochondriac regions."* All their exhalations and secretions are more offensive than in healthy children, and generally in diminished quantity. Sometimes the catastrophe is hurried on when children fall into this low condition of flesh and fluids, by an attack of hooping

* Lectures on the Practice of Physic, by Dr. Elliotson.—London Medical Gazette, vol. XI.

cough; from surgical operations;* from a blow on the head; or from some irregularity of diet; from exposure to the sun; and from a number of other events, which are only links in the chain of cause and effect, and certainly would not have sufficed to produce such a malady in children not already disposed to it. Talking in the sleep, gnashing of teeth, and deep sighing, should always be noticed with suspicion, as demanding the seasonable administration of remedies, to prevent worse consequences.

* Blows on the head, and severe surgical operations, in my experience, produce arachnitis, or inflammation of the membranes of the brain, with effusion into the ventricles. An interesting case of the latter description occurred at the Charing Cross Hospital, during my House-Surgeoncy in 1836. The patient was a child, residing in the neighbourhood of Bloomsbury, whose parents sought the assistance of the late Mr. Howship, to remove a large nævus maternus, situated on the right of the lumbar vertebræ. The tumour was removed by ligature, and all went on well for about sixteen days, when the child grew restless, peevish, and moaned incessantly; it shortly after fell into convulsions, and expired. Having been requested by Mr. Howship to examine the head and spine, I did so, and found on the post-mortem investigation, the vessels of the brain turgid, the ventricles contained about 2 oz. of pellucid fluid, and the arachnoid membrane exhibited at the base and lateral surface of the brain a white opaque appearance. No morbid lesion was discoverable in the spine.

CHAPTER II.

STAGES OF THE DISEASE AND THEIR SYMPTOMS.

For the convenience of arrangement, and with a view to facilitate the description of the disease, authors, in describing the malady have, with few exceptions,* adopted the plan of Whytt, of dividing the symptoms into three stages; that of inflammation, as they have recently called it; that of effusion; and that of convulsions with paralysis of one side. These stages will generally be observed in true Hydrocephalic fever. In the more chronical form, and in that of infantile Water Stroke, (Wasserschlag of Gölis) they are not to be expected.

Let us proceed, then, having in the preceding section sketched the signs of the premonitory condition, or that of morbid tendency, to describe the disease as it sets in with its peculiar outbreak of fever. The foregoing symptoms or indications of

* Gölis divides the disease into four stages, each depending on the assumed condition of the brain at the time. 1st. The period of turgescence; (which is similar to the premonitory stage.) 2nd, The period of inflammation. 3rd, Of effusion; and 4th, Of convulsions and palsy. Vide a treatise on the Hydrocephalus Acutus, by Leopold Anthony Gölis, M.D.: translated from the German by R. Gooch, M. D., London, 1821.

impending danger, are frequently overlooked or neglected by parents, and even the medical attendant is liable to error from only seeing such infants for a few moments, when his attention is temporarily called to them by some general observation. The mischief is not uncommonly thought to be transitory, or depending on worms, dentition, or infantile remittent fever. Now, however, the truth unmasks itself. The sense of weight in the head increases, becomes more apparent and oppressive. The child droops, hangs its head, or rests it temporarily for a few minutes by burying it in its little hands placed upon the table, or by supporting its elbows on its knees; frequent exclamations of *Oh! I am sick*, *Oh! my head*, escape the little sufferer. Now it is that fever encroaches by exacerbations towards evening. The skin becomes hot and dry, vomiting occurs after or during a meal, and yet the child often returns to its food with voracious eagerness. The breath is contaminated with a peculiar faint sickly fœtor. The tension and swelling of the abdomen subside. The belly becomes flat, but the pain and uneasiness in the epigastrium increase. Intolerance of light and of sound becomes more manifest; nevertheless the pupils are rather dilated than contracted, and, unlike what is seen in phrenitis,* the tunica albuginea, or

* In retinitis, or inflammation of the retina, (the inner coat of the eye), as well as in phrenitis, the white of the eye is always more or less injected and dry, and the pupil contracted to the smallest aperture. In Hydrocephalus, unattended with inflammation of the membranes of the brain, a patent state of the pupil exists, and the globe of the eye is either clear, or muddy and watery. Nor is there the same constant

white of the eye, is clear or muddy, but not bloodshot. The urine for the most part is of a deep amber hue, of high specific gravity, sometimes milky, and deposits a whitish slimy sediment, smells offensively shortly after being passed, and in its passage along the urethra occasions pain. The character of the urine in Hydrocephalus is essentially different both in its composition and appearance from that evacuated in phrenitis or inflammation of the brain. In the latter disease, it is generally of a dark brown, or porter colour, and contains more urea, and less of the lithates than the former. The deposit also is mostly of a reddish or reddish brown hue.

It is now that the child seeks the bed several hours before its usual time, and too frequently leaves it no more. The pain in the head increases, alternating with somnolency, and interrupted by piercing shrieks or plaintive moans, styled by Coindet, the "Hydrencephalic cry." The hand frequently travels to and fro from the head. The head is rolled from side to side, and now and then the patient lies on his belly, draws himself up on his knees, and makes a fulcrum for his head in the centre of the pillow, butting it, as it were, to relieve the pain. The vascular excitement is considerable; and the evolution of heat, more especially about the head and belly, is intensely augmented.

intolerance of light. The patient, indeed, shuns it in this as in many other febrile affections, but varies much in this respect during the day, being at times able to endure the glare of a shaded lamp without apparent suffering.

This stage of excitement or inflammation, as it is called, may last four or five days, or it may be much shorter, and even limited to a few hours; but it will invariably be followed by a train of symptoms usually indicating the collection of water.

Before I describe these symptoms, however, I have to record my opinion, that all the appearances, usually ascribed to effusion, may occasionally occur before death, and yet not a drop of water be found in the post-obit investigation. This disappointment must have occurred to every practitioner of large experience, who has paid any attention to the subject, and requires explanation. In such cases, it may be presumed, that the pressure from congestion, and the exhaustion, consequent on the previous febrile excitement, constitute a species of infantile apoplexy, which is sufficient to destroy life. At all events, there is the fact. No one can deny it. A case is watched and managed under consultation from first to last. Death ensues, and on examination of the contents of the cranium, no water is found to have collected within the ventricles. Yet the febrile phenomena, and the course of the malady, may have corresponded with the ordinary regular course of water brain fever.

The first sign of commencing effusion in my experience is the rolling of the eyes during sleep, with a pulse gradually diminishing in frequency. The somnolency becomes more permanent, and the fever less active. The pulse is now slow and laboured. The cheeks are no longer steadily flushed, but alter-

nately deadly pale, and then red, or one cheek pale and the other red. The breath is sickly and fœtid. A peculiar characteristic eruption breaks out on the lips, neck, and shoulders; and a clammy offensive moisture sometimes bedews one side of the head. A tendency to sighing is common throughout the malady, but increases much when the effusion has commenced. The pulse in this stage has been known to sink from 140 to below sixty; but rises rapidly on the least exertion. The tongue frequently assumes an aphthous redness. Sometimes the fauces appear slightly swollen and inflamed. Deglutition is performed in gulps, and seems to occasion pain. At this period of the disease, I have witnessed, that even when the child has lost the power of soliciting food, if proffered to the mouth, he chews it ravenously, and then ejects it. Squinting and irregularity in the apparent size of the eyeballs, will be generally noticed as the effusion advances. The urine now throws down a lightish yellow sediment, soon becomes ammoniacal, and smells pungent and fœtid; an iridescent pellicle is frequently seen floating on its surface.

In this late stage of the mischief, copious motions, scybalous, of a dark pitchy colour, and very disagreeable odour, with the rejection of worms, sometimes promise hope to the inexperienced, but they are fallacious signs; and, as in scarlatina and other fevers, they are rather the earlier couriers of dissolution.*

* It is by no means unusual towards the fatal termination of some acute febrile diseases, more especially of a typhoid character, to have large quantities of worms evacuated with the motions; even, tænia of considerable length, I have known expelled in this manner, which had

The second stage may endure from seven to fourteen days, to be succeeded by the next, in which the countenance is distorted; and convulsive twitchings, first observable in the face, are propagated all over the body. Paralysis in one limb, or of one side, is now very common: and the urine, which has all along been scanty, is now passed unconsciously in still more diminished quantity, and at longer intervals, mostly of a reddish hue without sediment. A sort of fever returns, which may be called the fever of death. The pulsations are extremely rapid, hurried, irregular, and thready. The pressure on the brain seems to increase. The breathing becomes more stertorous. Something like an epileptic fit may be observed, with foaming at the mouth; and before death, the heat of the body is suddenly and enormously increased.

A slight false cough, which partly resembles a suppressed effort to vomit, and not unlike the morning liver cough of spirit drinkers, is not an infrequent attendant throughout the three stages. Alibert notices this symptom in conjunction with embarrassed breathing, as a sign of ventricular effusion.*

previously resisted the most powerful vermifuges to dislodge them. Their removal is due in some measure to the low vitality of the tissues, and also to the nauseating fœtor emitted by the alimentary canal. Indeed, the fœtor, evolved in the intestines of a person labouring under scarlatina, is one of the most efficacious anthelmintics. The abandonment, by these parasites, of their habitation in the human body, confers no benefit on the sufferer, but, rather, is to be regarded as an indication of approaching death.

* Il se manifeste souvent une toux et une difficulté extrême de la respiration, accidens qu'on cherche vainement à combattre par l'emploi

It has occurred to me in directing attention to the peculiar cough just mentioned, to remark, that I have frequently observed it as an attendant upon the disease throughout all its stages; and, therefore, I think I ought to have enumerated a slighter degree of it, as one of the initiatory signs of the Hydrocephalic diathesis, even before the fever.

In vain will the practitioner try to relieve this cough with anodynes and demulcents; and it may be, that the chest shall be charged as the seat of the mischief, and the treatment, of a bronchitis or infantile pneumonia, shall be insisted on, whereas, it is but a sign of a certain condition of the brain and nervous system.*

I ought not to forget here to notice, how frequently I have seen death, with all its horrors, thus

des béhiques et des potions antispasmodiques. Ces phénomènes sont d'un fâcheux augure: ils indiquent un commencement de compression, et dépendent de la présence du liquide épanché dans l'encéphale. Nosologie naturelle, par Le Baron J. L. Alibert. Paris, 1838.

* In all cases, but more especially of a dubious character, auscultation of the head and chest should never be neglected; as it affords a ready means of ascertaining the seat of the disorder. The absence of any physical signs of disease within the chest, would afford negative evidence in favour of the disorder being located within the cranium. If the head be auscultated the normal and morbid sounds heard within the chest will be found propagated through the parietes of the cranium. In affections of the brain an encephalic murmur may be heard, which distinctly characterizes the seat of the malady. To this method of diagnosing diseases of that organ, I shall again revert. The cause of the cough, above alluded to, appears to me to arise from irritation of the cerebral extremities of the pneumogastric nerve. Hence the various anomalous symptoms which occur in the stomach, diaphragm, liver, &c., indicated by vomiting, sighing, sobbing, and epigastric tenderness.

advancing, to snatch its prey from the agonized parent; and, yet, the reparatory process of granulation, and of cicatrization or skinning, has been going on as healthily as though the child were about to live for years.

If we reckon from the first slighter exacerbations of fever, the course of the three stages will be spread over one and twenty days; but the case is seldom under treatment above fourteen.

In estimating the periods of the stages, and their extent, I have inferred them from my own observations; but I am quite prepared to admit, that if we were to reckon from the period when such children begin to fall away in flesh and firmness, looking pale and flabby, with an occasional dry, harsh, or faded skin, the under eyelid puffy, or of a livid tint, and the child manifesting occasional slight fever, inquietude, nocturnal restlessness, morosity of temper,—the disease in such a mode of reckoning would include more frequently a space of from four to six weeks.

CHAPTER III.

DIAGNOSIS OF HYDROCEPHALUS — DIFFERENTIAL DIAGNOSIS, BETWEEN SMALL POX, INTERMITTENT FEVER, HYDRENCEPHALOID DISEASE, AND WATER BRAIN FEVER — CEREBRAL AUSCULTATION.

In advancing to the method of distinguishing true water brain fever from certain affections allied to, or ending in it, I shall here remark, that such transitions do not at all affect the important truth, that more usually this disease advances insidiously through the protracted and premonitory stage, which it has been my aim to hold up to the caution of parents. It is perfectly true, for example, that severe hooping cough may gradate into the first stage of water brain fever; so, also, as remittent fever may simulate Hydrocephalus, it may, in reality, pass into it, never to recover its remittent character. The same may be said of the fever of teething, and of that produced by the irritation of intestinal worms. Equally liable to the same transitions are other abdominal affections, diseases of the liver, spleen, intestines, and mesentery; the last a very common complication with normally developed acute Hydrocephalus. The surgeon recognizes blows as an exciting cause of the same affection. It has been

induced also by the accidental swallowing of large quantities of strong drinks; and it has followed upon the taking of certain vegetable poisons. Again, it has, without any previous warning, suddenly set in, after suppressed eruptions, suppressed headsores, and discharges too suddenly arrested from and behind the ears. Again, it is to be observed, that even the more chronical form of water of the brain, in which the collection is not in the central cavities, but on the brain itself, is sometimes so much more rapid than usual, that, although it is essentially a different disease, it is not infrequently, but nevertheless erroneously, grouped with the more genuine form of water brain fever. By those who do not make accurate distinction between head disease of infants, accruing upon the various forms of fever specified, Hydrocephalic fever is thought to be tolerably manageable by active treatment in the first stage. I have heard practitioners speak of their success with much confidence, until their explanations have convinced me, that they were speaking of cases in their whole aspect distinct from the fatal form of which we are now treating. In fact, they have mistaken phrenitis* in its acute

* Phrenitis and encephalitis are made use of to signify inflammation either of the brain, or its membranes, or both. Some authors think it impossible to distinguish between the two. Cerebritis is a term for inflammation of the substance of the brain; arachnitis for inflammation of the arachnoid membrane; and meningitis designates inflammation of any of the cerebral involucra or coverings. But I believe it is utterly impossible, in acute diseases of these parts, to discriminate in children between idiopathic inflammation of the brain and its investing membranes. When, therefore, I use any of these

or subacute form, for Hydrocephalus. If my convictions were not strong on this point, I should deem it useless and impertinent to address myself in a popular style to parents on this disease; for how could it be reasonably expected, that they should be able to appreciate the various maladies which are liable suddenly to gradate into the form of acute Hydrocephalus? I have only to reiterate my assertion, that the disease in its genuine type is as strongly characterized as any form of fever known in our climate, and that it gives much more extensive warning of its approach, with some few exceptions. In this respect, nearly the first distinguished writer upon it, among our own countrymen, in whose wake all have followed,—some more in detail, several with more confidence in their plans of cure, but none with more accuracy,—says with much simplicity of truth, "I freely own that I have never been so lucky as to cure one patient who had those symptoms which, with certainty, denote this disease; and I suspect, that those who imagine that they have been more successful, have mistaken another distemper for this."* It has happened to me as to this original author, to have met with medical men, who, having succeeded in curing a fever attended with much headache, contraction of the eyebrows, convulsions, and coma, have jumped to the conclusion, that by

terms, except arachnitis, it must be understood that I mean inflammation within the cranial cavity, without reference to any lesion of individual parts.

* Whytt, on Dropsy of the Brain, p. 46.

bleeding, active purgation, blisters, and mercurialization, they have successfully checked true Hydrocephalic fever. Nor do I doubt that phrenitis, remittent fever, worm fever, the fever of teething, fever from exposure to the sun, and fever from disturbed digestive organs, from injuries to the head, and many other affections of the brain, may be arrested by these and other suitable means. Success in the removal of the so called Hydrocephalic symptoms in many of these cases, is not altogether improperly enumerated, by Dr. Whytt, as one of the additional proofs of such forms of disease not being the genuine Hydrocephalic fever. "For the character of this malady," writes this author, "is confirmed by nothing so much as by the certainty and obstinacy with which it holds on its fatal course, from the setting in of the fever, through the second and third stages, to the death, without admitting of any beneficial impression by any known form of medicine or regimen." Thus, although one may be pretty certain of the character of the disease, when the fever is marked by spontaneous vomiting, browache, and a rapid, excited, intermitting pulse, no doubt can exist of its true nature, when the pulse changes to a slow, laboured, and irregular character, the temperature of the body continuing steadily above the natural standard, and the other symptoms remaining with unmitigated intensity.

Dr. Whytt very justly complained that up to his time, writers had confounded the signs of dropsy of the ventricles with those of dropsy of the investing

membranes of the brain; and with equal truth declares that the ancients were altogether ignorant of this disease. What were the feelings he provoked among his contemporaries by the former part of this avowal, I cannot do more than conjecture; but I am quite satisfied, that although the malady is much better discriminated by many of the moderns, the majority of medical men still commit the same error; for, few of them apparently in practice are found to lay down any distinct lines of demarcation, whereby the appearances and progress of this disorder may be distinguished from worms, visceral disturbance, or remittent fever passing into coma. If called in suddenly to children at the onset of the fever, without any correct history of the previous morbid signs already enumerated, it is no easy matter to discover the nature of the malady; but when we meet with patients (to use the language of the same author), "under fifteen or sixteen years,"—and he might have added above two years, (for the most perfect form is seldom seen below or above these periods),—"seized with a slow fever of no certain type, and irregular in its accessions and remissions;—when in that fever, the patients vomit once a day, or once in two or three days, without any assignable cause;—when they shun the light, and complain of a pain in the crown of their heads, or over their eyes, after the fever has continued for some time, or of a pain thereabouts, that in some does not abate like the headache in ordinary fevers;"—when these complaints neither yield kindly to any of the usual remedies for diminishing

fever;—there is then good reason for suspecting the existence of true water brain fever. But it is not until the rapidly excited, yet intermitting pulse, has changed into a slow, laboured, and irregular character, that we can be certain of its real nature. I am aware that cases of this disease are recorded as having occurred after the age of fifteen or sixteen, but they are exceptions, and very doubtful exceptions to the rule; and unattended with any satisfactory proofs of puberty having been established. Puberty is a bar to the complaint. Amid all the various collections of cases, one can arrive at no conclusion at variance with this inference; and it furnishes abundance of material for considering how far the malady is intimately connected with the slow but mysterious changes by which the generative principle works its own mastery over the powers of the system.

Our method of discrimination may also be strengthened by noticing how completely the common laws of the temperative principle are set at defiance in this disease. The pulse shall beat 140, nay 160 or more; the heat is steadily beyond the natural standard. It may sink below 80 or 60 in the second stage, and yet the heat continues steadily above the natural standard. I know no other disease of infancy in which this phenomenon is common. In apoplexy, indeed, we see it in adults for a time, but only for a few hours. In true Hydrocephalic fever it is the most common and uniform symptom; it may be said to be the universal attendant. How completely at variance is this fact with our commonly received

notions of the circulation. The quicker the heart's action, the greater the temperature. Here, however, we have the Crawfordian theory set at nought by nature, who offers us exceptions and mortifying contradictions to all theories. The heat in the second stage cannot be sustained by the rapidity of the circulation, for it is abnormally slow. It can only be kept up, therefore, by the condition of the nervous system, the brain and nerves being known to exert at all times a great influence in the development of caloric. Diminution of the action of the arteries, and diminution of heat, are strongly associated in the minds of medical men as necessary companions, but not so in this extraordinary affection. How strong a contrast does this afford with respect to true inflammation of the brain! Do we approach the bedside of a patient with phrenitis, and do we find the pulse gradually sinking from 120 or 130 beats to 70 or 80, we may surely expect simultaneous diminution of temperature. I know of no single circumstance in the history of any malady which is more contradictory of physiological theories. Does the physiologist persist in attributing degree of caloric to degree of frequency of arterial action? Let him go to the bedside of a Hydrocephalic patient. Does he attribute it to nervous vigour? Still here he will find his contradiction. Does he attribute it to the union of carbon and oxygen throughout the capillaries? Let him regard the limited supply of material, and the theory of Liebig vanishes. Or to the process of innutrition, with Dr. Collier? Here he sees

nutrition all but suspended, and yet the temperature as high as ever. Let him not be deceived by chilly hands left exposed and uncovered, but let him examine the trunk and head, and he will be satisfied with the fact as here stated.

I have remarked that a sudden suppression of a discharge from behind the ear, or from its passage, may occasionally be the exciting cause of Hydrocephalus. I ought here to notice, that strumous disease of the internal passage of the ear, first affecting the lining, and by degrees affecting the membrane of the brain, and that portion of the brain which is in the vicinity of the mouth of the meatus, though equally fatal as are cases of Hydrocephalus, is, nevertheless, with ordinary caution, readily distinguished. And the simultaneous affection of the mastoid process, its swollen and occasionally fluctuating feel, with a livid redness of the surface, afford a valuable index of its connection with mischief originating in the organ of hearing. Kramer* has pointedly referred to this disorder, and strongly insists on the paramount importance of an early inspection of the ear and mastoid process. Such a case generally follows about three weeks (more or less) after the ear has ceased to discharge. Sometimes the discharge returns shortly after the commencement of the febrile attack. With respect to such stoppage of purulent discharge from the ears, it may be observed that the development of the scrofulous inflammation, leading

* Vide Kramer on the Diseases of the Ear; 2nd edition. Translated by Dr. J. R. Bennett.

to the abscess in the brain, will require a longer or shorter period, according to the age of the patient. A few days will suffice for an infant under six years; a fortnight for children at the age from ten to fourteen; a month as the age approaches one-and-twenty; and, as in the undermentioned case, six weeks. The first case of this kind I saw, was in a Mr. Tombs, a married man, aged twenty-six, residing at Stepney, in London, and attended by Mr. King, Mr. Luke, and myself. The attack ensued about six weeks after the cessation of the aural discharge, which, however, returned in copious quantity, of a fœtid character, from the right ear, on the third day of the fever; coma rapidly followed, and the man succumbed to the virulence of the disorder on the fourteenth day of the seizure. In the examination of the brain, a large abscess was discovered in the right lobe of the cerebellum, containing a quantity of extremely offensive matter, and the dura mater of the same side opposite the auditory foramen, was partially destroyed, and extensive necrosis of the labyrinth and auditory passage in the temporal bone existed.

These cases, unlike genuine Hydrocephalus, may occur at all ages. Males I have found more obnoxious to the disorder than females. This malady is not attended, for the first five or six days, with any considerable pain, but rather with an unaccountable depression of spirits and oppressive weight in the head. After the pain has set in, it becomes excruciating, and the patient cannot rest in bed night or day, but walks about frantic, and squeezing or striking

his head, which he can scarcely turn without increasing his misery. Still the fever is inconsiderable. Shivering, denoting the process of suppuration, comes on the eighth or tenth day, and the patient gradually passes into a state of coma. The last patient I had in this malady, was a young man of twenty-two years of age, who entirely lost the power of speech. He motioned for a bible, and on its being placed before him, and his head being lifted up and supported, he went through the form of muttering, as if reading, although he could not see a line. After death, an abscess was discovered near to the petrous portion of the left temporal bone, containing a greasy, dark, and extremely fœtid pus, and the dura mater and a portion of the meatus were livid and destroyed. I need scarcely add, that these cases are nothing more than scrofulous abscess formed as a sequel of caries of the inner passage of the ear, after long-continued running, habitual probably from early infancy.

Another sudden complication of symptoms, may simulate the fever for a very short time only: these arise from surfeits or extensive accumulations in the alimentary canal. I was called some time since to a delicate girl, about six years of age, who was reported to have become insensible after retiring in the early part of the preceding day to rest, upon excessive repletion with cakes and fruit. Not awaking on the following morning, and her mother failing to arouse her, she seemed to be in imminent danger. Judging by the distended state

of her stomach, that the apples she had eaten had not passed the pylorus, I ordered her a mustard emetic, and after its operation, she soon recovered. Now from the sighing, moaning, dilated and immovable pupil, slow and laboured respiration, observable in collections in the stomach or large intestines, one might be led to suppose mischief to be going on in the brain. This condition of brain is, however, merely symptomatic of the oppressed condition of stomach and digestive organs, and vanishes after vomiting or active purgation. The same appearances may temporarily occur in remittent fever from retention of bile, and even in this case will rapidly subside as the liver returns to its duty. The first species is readily distinguished by its suddenness, and by its not being preceded by inflammatory fever or occasional vomiting, and by its following hard upon an intemperate meal, or some error in diet. The second form of imitation must be diagnosed by the general characteristics of remittent fever; by the remissions most remarkable in the morning; by the mudlike stools; dirty, white, or greyish deposit in the urine, and by its greater abundance; by the night restlessness, and rapidity of pulse and respiration, which last presents no uniform relation to Hydrocephalus. Still, however, the professional man bears in mind that remittent fever may be converted into Hydrocephalus, and in that case there is an end of the diagnosis. It is only so long as it approaches near to it, that the greatest discrimination is essentially requisite for a just prognosis; for we have in

the one case much to hope for, in the other every thing to dread. The former, or the most acute kinds of infantile remittent, constitute a great proportion of the so-called successful cases of Hydrocephalus.

Since it must be admitted, that it is of paramount importance to establish correct indications, whereby true Hydrocephalic fever may be readily discriminated from phrenitis, remittent fever, incipient small pox, infantile pneumonia, and the Hydrencephaloid disease, maladies with which it is most likely to be confounded, I shall not hesitate to trespass a little more on the attention of my readers, whilst I endeavour to lay down a few landmarks, characteristic of some of the above affections; and also to contrast them with the more prominent symptoms which usually denote the existence of water brain fever.

Headache.—One of the earliest signs of incipient Hydrocephalus is pain in the head. This symptom is equally manifest in all cerebral affections. It is as constant an attendant upon encephalitis, remittent fever, and incipient variola, as upon water brain fever. But the character of the pain is somewhat different. In inflammation of the brain, it is sharp, piercing, and constant, and darts, as it were, through the temples; the patient, when requested to shake his head, refuses, and moves it slowly and cautiously. In Hydrocephalus, the pain is generally referred to the frontal region, with a stiffness or uneasy feel, scarcely amounting to pain, in the posterior part of the scalp. The pain is, for the most part, severe and lancinating, and occurs in paroxysms, during

which frequent and involuntary ejaculations escape the infant. If desired to shake the head, the child usually assays the attempt, and suddenly stops, uttering a most piercing cry, and holds the head fast between the hands. The head feels heavy and full anteriorly, and there is a strong tendency to rest its frontal surface against the pillow. In infantile remittent, the pain is evidently of a more dull obtuse kind, not unlike what occurs in incipient variola, but distinguished from the headache of small pox, by the periodicity of its character; by the distinct remissions noticeable in it; and by its increasing in intensity with the increasing diurnal febrile paroxysms, and its gradual subsidence as they subside. In small pox and remittent fever, children will shake their heads, freely and quickly, if asked to do so, without any apparent augmentation of their sufferings. Rigors or chills usually usher in the fever in both these affections, but, though occurring, they are usually so slight and transient as scarcely to attract attention in water brain fever. That pain in the head is one of the most common and constant symptoms of Hydrocephalus, is attested by most authors, from Whytt, downwards. Dr. Abercrombie observed it in nearly all the cases he enumerates. Dr. Hennis Green found it a prominent symptom in 53 out of 64 cases. I have only once failed to ascertain its existence, at some stage of the disease, in all the cases that have fallen under my own observation. It has generally been most distressing, and usually most severe, towards night.

Vomiting. — The next important symptom that ought to claim our special attention, is vomiting; and this, like the former, accompanies the disease from its commencement, and is, if anything, a more decisive sign of approaching water brain fever than headache. Of all the cases mentioned by Whytt, one only, a little boy of eleven years of age, had no sickness. This sickness is increased by motion, or by the upright position; and is generally spontaneous, occurring during or shortly after a meal. The contents of the stomach have a foul smell. Vomiting is also frequent in inflammation of the brain; as also at the commencement of small pox; and in infantile remittent fever. In Hydrocephalus and encephalitis it is mostly unattended with nausea, is spontaneous, and not infrequently the little patient, in the former case, immediately after he has evacuated the stomach, returns to food with avidity. In inflammation of the brain there is mostly anorexia, or a disinclination to take solid nourishment; and in incipient small-pox and infantile remittent, always. A feeling of sickness and oppression in the præcordial region, with a corresponding depression of the countenance, is discernible in commencing variola, but absent in the other affections.

Dizziness, stupor, and sympathetic pains in the extremities, with swollen and retracted state of the abdomen.—In inflammation of the brain or its membranes, we have more or less of active delirium, which is of a violent character, frequently preceded, it is true, by vertigo, or a sense of dizziness, but

which is mostly of short duration; whereas, in acute Hydrocephalus, it is experienced prior to and prolonged through the first stage; and ferocious delirium rarely occurs, unless the disease be complicated with arachnitis; a not infrequent occurrence. The giddiness in Hydrocephalus is most perceptible on rising out of bed, or on suddenly assuming the erect position. A sensation of faintness, followed by darting pain through the temples, supervenes on this effort, and the child suddenly ceases his amusement, if engaged in any. The stupor which we usually see in Hydrocephalic fevers, is seen also in all active cerebral affections, and is not very different to that experienced in eruptive and other fevers, save in its intensity and continuance, and in the benumbing effect which it exerts over the system. This influence is so considerable, that a patient during the interval of the paroxysms, if interrogated as to his ailments, will mostly answer, in reply to the question, has he any pain? No.

Hydrocephalic patients usually complain of considerable pain in the bowels, and also of uneasiness in the extremities, sometimes attended with actual pain, of a rheumatic description. The former occasionally partakes of the nature of colic, and gives rise to much suffering in the abdomen. Associated with the above is also tenderness along the course of the cervical and dorsal vertebræ, with a sensation of stiffness. These symptoms are rarely met with in the other affections. In the febrile attacks ushering in inflammation of the brain, in the exanthemata,

more especially small-pox, there is an aching of the extremities, and across the loins, but though occasionally of a wandering type, it is very different from that which we meet with in water brain fever. These pains mostly vanish on the establishment of the eruptive fever, which may also be said of the sympathetic pains of the bowels. The latter not infrequently mask the real nature of the disease, and induce the belief of the existence of peritonitis; as the same tenderness on pressure diffused over the whole abdomen, with retraction of the legs in bed, sometimes accompanies the earlier stage of small-pox fever. But all these symptoms subside as the eruption progresses; not so in Hydrocephalus. The pains in the abdomen increase as the disease advances; and notwithstanding the subsequent subsidence of the belly, they still remain in the right hypogastric and the epigastric regions. The abdomen, in remittent fever, is mostly very tumid and hard, and tenderness is felt over its whole surface; but it does not fall in and become flat as it does in acute Hydrocephalus.

Palpation and percussion should never be neglected in diagnosing between these various diseases.

On the pulse and respiration.—In acute inflammatory disorders, the arterial system sympathizes deeply with the increased excitement, and we have consequently a corresponding increase in the radial pulsations. But whilst in membranous inflammation, whether of the cranial, the thoracic, or the abdominal cavities, the pulse is, for the most part, quick, rapid, vibratory,

small, and jerking; in inflammation of the parenchymatous tissues, it is usually found full, oppressed, rolling, and not infrequently irregular. In the exanthemata it is generally quick, rapid, full, and bounding, producing an unpleasant tingling sensation at the apices of the fingers. In Hydrocephalus the pulse during the first stage is much accelerated, full, but more easily compressible than in encephalitis, with a perceptible variation in the rhymth of the artery, and in the regularity of the strokes. The pulse sometimes beats as quick during one-third of a given time as it had previously done during the former two-thirds. Thus, in a child whose pulsations were 140 a minute, I have witnessed half, or 70 strokes, performed in 40 seconds, and the remainder in the other 20 seconds. There is also a distinct intermittency in the 7, 17, or 20 pulsation, and it often changes its character; one or two strokes, in quick succession, may be felt soft, weak, and fluttering. In the second stage, the pulse sinks and becomes slow, laboured, intermittent, and irregular, and is easily quickened by motion, or mental disturbance, to double its amount of pulsations.

The respiration and arterial circulation in water brain fever seem at variance with their usual consentaneous harmony. When from any cause an increase or decrease takes place in the motion of the heart, it is accompanied with a corresponding augmentation or diminution in the action of the respiratory organs. This rule, so general in all other affections, is in the malady under consideration completely laid aside.

Whilst in the first stage the pulse rises as high as 140 to 160 a minute, the respiratory movements do not exceed 40 or 50. The inspiratory effort is, for the most part, performed in a quick, hurried, convulsive manner, and there is a marked increase in the duration of the expiratory act and the period of repose; deep and prolonged sighing often intervenes, and considerably diminishes the amount of the respiratory movements.

Nature of the alvine and renal secretions.—Attention to the constipated condition of the alimentary canal, and its continued obstinacy, notwithstanding the employment of powerful aperients, with the peculiar appearance of the fæces, of a gelatinous and adhesive consistence, adhering to the sides of the vessel in which they are deposited, contribute valuable aids to our diagnosis.

Occasionally, though very rarely, the fever sets in with diarrhœa, "for the body is sometimes loose, sometimes bound, never natural; generally speaking, costiveness, and a surprising insensibility of the bowels to the stimulus of the most drastic purgatives,"* are met with in the primary stages of the disease. The evacuations are in some cases waxy, clay-coloured; in others of a darkish green, and they always exhale a very faint sickly odour. It was remarked by Dr. Fothergill, at a very early period of the disease, that the "stools are most commonly of a very dark greenish colour, with an

* A Treatise on Hydrencephalus, or Dropsy of the Brain, by J. Carmichael Smyth, M.D., F.R.S. London, 1814.

oiliness or a glassy bile, rather than the slime which accompanies worms. They are for the most part singularly offensive!"

Cheyne, Brachet, Gölis, and most subsequent writers, have confirmed the above description, and each declared a similar condition to exist in the fæcal matter of patients afflicted with Hydrocephalus. My own observations have led me to similar conclusions. I cannot, therefore, agree with the recently expressed opinions of a late author, that "far too much stress has been laid on the *appearance of the stools* as a source of diagnosis." It is not by a mere cursory glance at the contents of the chamber utensil, that the physician will profit by the inspection of the stools, or draw from their colour alone any practical inference touching the nature of the disease. Compare the evacuations of a patient in phrenitis, small pox, or remittent fever; do we find them possessing the same tenacious, gluey, glossy properties, and cadaverous smell, which characterize the stools of water brain fever? The fæces in all these affections may, it is true, be offensive, but are they at the same time gelatinous or glairy?

Nor ought we to neglect the investigation of the renal secretion, as much additional light may occasionally be thrown upon this somewhat obscure disease, by early attention to the nature and chemical constitution of the urine. When the system is in a high state of phlogosis, the urine is mostly of a high specific gravity, diminished in quantity and altered in appearance, still retaining its normal constituents

in increased proportions to the fluid in which they are dissolved, but not materially increased, rather decreased, in amount to that usually eliminated from the system in twenty-four hours. This state of the urine is particularly observable in fevers and inflammatory disorders, whether of the head or chest, but is very much modified or entirely altered in many acute primary affections of the chylopoetic and abdominal viscera.

The fluid secreted by the kidneys in Hydrocephalus is very different from that of the first kind of which we have been speaking. In the first stage it is of a sickly odour, citrine or golden yellow tint, of high specific gravity, and slightly tinges litmus paper red; it is sometimes milky, turbid, and deposits a yellowish white, slimy sediment. Often it is micaceous, as Coindet trems it, that is, abounds with the phosphates, and quickly evolves a beautiful floating pellicle, like small particles of mica, which reflect a brilliant hue.* This milky appearance of the secretion must not be confounded with the turbid or wheyish urine of infantile remittent fever, which last is of low specific gravity, and has a dirty white or greyish deposit, small in quantity, and often contains traces of oxalate of lime. More attention to the indications furnished by the urine in the various maladies incidental to the human frame,

* "L'urine est remplie de particules micacées qui forment à sa surface une pellicule brillante, ou qui se précipitent comme un nuage léger formé de petits cristaux, qui, vus à travers la lumière, paroissent très-éclatans." Mémoire sur L'Hydrencéphale ou Céphalite Interne Hydrencéphalique, par J. F. Coindet, D.M., Paris, 1817, p. 35.

will tend materially to augment our diagnostic resources, and afford valuable assistance in the proper application of therapeutic agents.

Cerebral auscultation.—My attention was first drawn to the advantages that might probably be derived from auscultation of the head from reading some remarks by Dr. J. D. Fisher, in the Gazette Medicale de Paris, for the year 1834 or 1835, (I forget which, at this moment, and have not the means of reference), on a peculiar cerebral murmur in two cases of acute Hydrocephalus.

Since then Dr. Smyth, amongst his other contributions to pathology, published in the Medical Gazette for 1837, has cursorily alluded to a similar sound heard in chronic Hydrocephalus.

More recently Dr. Whitney, of Newton, Massachussets, has called the attention of the profession to the important results obtainable from acoustic exploration of the head in cerebral disorders.* I have not been able to verify the accuracy of all the conclusions deduced by this able writer from the auscultic phenomena reported to be found in various morbid lesions of the brain and its appendages. Some of them appear to me to be hypothetical. Still there undoubtedly occur, in diseases of the head, certain striking and well marked deviations from the normal cephalic sounds of the arteries, of the voice, and of respiration, such as are capable of furnishing valuable diagnostic criteria, by which to decide between mischief existing extraneous to or within the cranium.

* Vide American Journal of the Medical Sciences for October, 1843.

One may be excused for being sceptical on some knotty points which involve a nice discrimination, and which are not supported by accessory signs. Though no one can appreciate more fully than I do the labours of Laennec and others in this department of diagnostics, yet I do not think that auscultation has so far advanced our knowledge of cerebral diseases as to enable us to distinguish between simple irritation or congestion of the brain, and inflammation of the same organ; between ossification of the arteries of the brain, aneurism of the basilar artery, or induration or scirrhous transformation of the substance of the brain, or between the various acute disorders centered in that cavity. It is, nevertheless, a great advance to be able by the aid of auscultation to discriminate between the first stage of inflammation of the brain, or congestion of that organ, effusion into its cavities, and the Hydrencephaloid disease; and to recognize the existence or non-existence of cerebral complication in disorders of other viscera. These separate conditions of this organ, I am inclined to believe, may generally be ascertained and distinguished by careful investigation of the cephalic sounds. Time, patience, and human ingenuity may, and I have no doubt will, do much to render more easy the detection of many of those obscure affections of the brain which at present puzzle and perplex alike the head of the physician and the patient. In the mean time we ought to be thankful that our knowledge is now so far perfected by the immortal discovery of Laennec, that not only diseases of the chest, but also some of the head and abdomen, are more

readily discerned; and as a consequence of the better information we possess, our remedies can be applied much more advantageously and less empirically.

The normal sounds discoverable through the head, on applying the stethoscope to its parietes, are four, 1st, respiratory cephalic murmur; 2nd, cardiac cephalic bruit; 3rd, vocal cephalic resonance; 4th, cephalic sound of deglutition.

The first of these sounds is caused by the transmission of the sound of the healthy respiratory murmur through the bones of the skull. Dr. Whitney ascribes it to the air impinging against the nasal cavities; but that such is not altogether the case, may be proved by compressing the alæ nasi with the fingers, so as to prevent the egress and ingress of air through the nasal apertures, when the same sound, diminished in intensity, may still be heard. This sound resembles a soft interrupted blowing, and may be imitated by breathing slowly through the stethoscope, or any narrow wooden tube, without compressing the lips. The inspiratory murmur alone is heard.

The second sound is occasioned by the contractions of the heart, and is isochronous with its pulsations. It is of a soft undulatory pulsatory character, conveying to the ear the impression of the finger gently tapping a soft elastic body, as a thin Indian rubber ball, or a bladder partly filled with water. It is similar to the sound heard in the femoral artery, in a plethoric subject, on lightly applying the stethoscope.

The vocal cephalic resonance is the sound of the voice conveyed through the cerebral mass, and reverberating in the vaulted cavity. It is sharp and piercing, and imparts a vibratory sensation to the hand and ear.

The remaining sound is of a dull massive liquid character, easily recognized and distinguished from the rest. It is caused by the contractions of the muscles of the pharynx in the act of swallowing, and by their sudden relaxation after the food is propelled into the œsophagus during deglutition.

For practical purposes, the three first only of these sounds convey much real information. It may be as well here to remark, that for cerebral auscultation, the stethoscope, with the ear-piece, should be turned out of one solid piece of wood; the distal extremity should be made thicker, and the concave aperture rather less than those in general use.

When disease affects the brain, or its involucra, a sensible alteration is manifest in the cephalic sound of the heart and the voice. The former, especially, notifies the commencement or existence of some change in the normal condition of the brain, when it alters its character, from a soft and feeble to a rough, harsh, or blurting sound, which in the Hydrencephaloid disease is accompanied with a musical intonation of the arteries, very easily recognized and remembered when once heard.

This sound is of varying intensity, according to the activity of its cause, and may be imitated by drawing the finger quickly and heavily across a piece

of velvet, or fustian. It is loudest in cerebral congestion, apoplexy, and in the stage of effusion when the circulation is abnormally slow, and then not infrequently becomes rough, harsh, grating, rasp-like. In simple excitement, or erethism of the brain, in commencing Hydrocephalus and phrenitis, this sound is softer, quicker, more like the bellows sound of the heart, heard in endocarditis. That this auscultic phenomenon is dependent for its formation on disease within the cranium, may be inferred from its absence in the carotid arteries of the neck, where it would be certain to be found if it arose from derangement in the heart, or its great vessels. Sometimes there may be heard a soft blowing sound in the common carotids, when the cephalic sound is rough and rasp-like; but it then becomes less and less audible as we approach nearer the position of the heart.

Should any thin fluid have accumulated in the head, a modification is heard in the sound of the voice transmitted through the osseous parietes of the cranium; the nature of this sound is trembling, sharp, and bleating, and it has a silvery tone not unlike the one produced in pleuritic effusions, and it may with propriety be termed the cephalic œgophony. It is very easily discerned in large aqueous collections of the skull, where the fluid is dispersed over the whole surface of the brain, and also in those cases of chronic Hydrocephalus where the ventricles are considerably distended with watery accumulations. This sound may likewise be recognized in the stage of

effusion in acute Hydrocephalus and inflammation of the brain, &c., but it is then less defined, becoming more sharp, clanging, vibratory. In sanguineous extravasations, the voice appears increased in intensity, but little altered in its sonorous properties.

In some diseases of the thorax, sensibly affecting the healthy respiratory murmur, a similar alteration is imparted to the healthy cephalic murmur of respiration, which decidedly announces the changes taking place in the organs of the chest. The various rhonchi of bronchitis and pneumonia, of phthisis, hæmoptysis, &c., may be distinguished by auscultic inspection of the cephalic respiratory murmur. Hence the importance of cerebral auscultation in determining in disorders of the head, complicated with affections of the chest, the existence of the latter; so that the appropriate treatment suited to each may be early resorted to before irremediable and unsuspected mischief shall have ensued. It must not be deduced from the above observations, that the examination of the head may be substituted, or will suffice in thoracic disorders, for auscultation of the chest. Attention is directed to it, simply that a more careful investigation into the abnormal physical signs of the chest may be made, whenever we find a deviation from their healthy standard, however slight that may be in those heard in the cranium; and this cannot be done unless we both carefully percuss, as well as auscultate the parietes of the thorax.

The physical signs of the head, whilst they are not pathognomic of any individual affection of the

brain, are nevertheless exceedingly useful in assisting us to decide upon the existence, or otherwise, of disease located there or elsewhere; also whether serous effusion shall have taken place or not, and how far the disorder is one of the head only, or complicated with disease of the respiratory organs.

Though I have for years attentively studied the auscultic phenomena witnessed in common in various lesions of the brain, I cannot satisfy myself, that as yet we possess any definite knowledge, which may be said to indicate with certainty, any individual or peculiar malady of that organ; but they are merely descriptive of sundry morbid changes occurring in that viscus, the result of numerous causes, whose separate effects are not at present appreciable to our senses, or distinguished by their means one from another.

An extensive field for exploration is here opened to the practical physician. It is a department of pathology which will amply reward in mental satisfaction, those who devote themselves to its exposition. The knowledge of having contributed a mite to the relief of suffering humanity, will entail far more permanent happiness than a shoal of golden fees can ever produce; and afford to the reflective mind on a retrospect of the past, when life is fast ebbing to a close, a more soothing balsam than all the anodynes that human ingenuity can supply.

Morbid sensibility of the Eye and Ear, with diminished sensibility of the nasal organ.—Our diagnosis of this important disease may further be

established by the morbidly increased sensibility of the eye and ear, to their usual stimuli. Though the eye in Hydrocephalus turns from the light, and seems distressed with it, yet the tunica albuginea remains nearly of its natural hue, very unlike the highly vascular and injected state of that membrane, which is so constant an accompaniment of phrenitis and variola. In the latter disease, as in Hydrocephalus, the eye is watery, suffused, and very dissimilar from its dry appearance in the former. The pupil, as has been before observed, is always dilated in idiopathic Hydrocephalus; it is only when the disease is complicated with inflammation of the brain or its membranes, that it is permanently contracted.

In addition to the above, there is a singular phenomenon observable in some Hydrocephalic patients, first alluded to by Dr. Hennis Green,* and which I do not remember to have seen noticed in any other malady, or by any other author. This symptom consists in a contracted state of the eye-lids, which resist every attempt to expose the ball of the eye. It is fugitive in its character, suddenly appearing and disappearing without assignable cause. Sometimes one eye only is affected, or it is alternately first in one eye and then the other. I have imagined this symptom to originate from irritation of some of the filaments of the fifth pair of nerves spasmodically affecting the orbicularis muscle of the eye, as I have frequently seen in connection with this sign, (which Dr. Green

* Vide Provincial Medical and Surgical Journal.

considers pathognomic of the affection,) an itching of the alæ nasi and lower lobe of the ear on the same side, with increased redness.

The auditory nerve in water brain fever is pained by the slightest movement; and the accustomed sounds become distressingly annoying to the patient; even crossing the threshold of the bed room excites the most excruciating sensation in the organ of hearing. As the malady advances the nose becomes dry and cracked; and there is for the most part diminished sensibility of the olfactory organ, which increases with the progress of the disorder.

Sleep and love of solitude, muscular contractions, strabismus, convulsions, and paralysis.—Most Hydrocephalic patients sleep badly. Their sleep is interrupted; and they sometimes awake with a sudden scream, or piercing moan, throwing back the head and bending back the spine. Such patients are constantly dozing, but their rest is never refreshing; on the contrary they seem to grow weaker and weaker after it, and whine piteously during their slumbers. In their waking hours such children prefer being alone; and often in the earlier stage, are found to have secreted themselves in some lonely place.

Generally there is anorexia, but sometimes a strong craving for food exists, which, when given, they devour with voracious eagerness. They express little desire for fluids, and mostly content themselves with simply wetting their lips, and then they turn from the cup as if in disgust, or peevishly toss their little heads back and refuse to take it; if pressed, they

swallow hastily and greedily, and fall suddenly back on the pillow, as if exhausted. They sigh deeply.

The disease advancing, a new train of symptoms arise; rigidity and stiffness of the muscles, of a fugitive description, never persistent, are succeeded by complete dilatation of the pupils, perfect tolerance of light, strabismus, double vision, entire loss of smell, deep coma, muscular twitchings of the limbs, frequent raising of the hand to the head, boring of the nostrils with the fingers, picking and pulling of the ears, with constant plaintive moanings; diarrhœa now replaces obstinate costiveness; the breath is extremely fœtid; miliary vesciles occasionally appear on the body, and face; and they lie in bed with their heads thrown back, and the feet slanting in the same direction. Convulsions at this stage of the disease are common, and frightfully distort the features. The tunica albuginea becomes bloodshot; paralysis of one side, mostly the right, or of the extremities, follows; the unpalsied arm saws the air backwards and forwards, or plucks at the eye as though it would pull it out of its socket; the urine is passed involuntarily. A slimy mucus covers the eyeballs, blood occasionally oozes from the nose; the tips of the fingers become red; the body is wasted to a mere skeleton; perfect blindness ensues; the pulse rises in frequency, becomes countless, and ends in a mere flutter of the arteries; the convulsions return more frequently, and one more severe and prolonged than the rest usually winds up the tragedy.

CHAPTER IV.

ÆTIOLOGY OF HYDROCEPHALUS — STATISTICS — IS THE DISEASE HEREDITARY? — EXCITING CAUSES.

THE causes of Hydrocephalus are manifold: the principal have reference to the state of the brain in the earlier periods of life, with a defective nutriment of that organ, and also to the preponderating influence of the arterial over the venous system.

Authors both at home and abroad, who are so thoroughly wedded to the inflammatory doctrine, enumerate amongst the more prominent causes, injuries of the head, jumping, or other bodily concussions. These, indeed, may excite the disease, but I believe in general they give rise to a subacute species of meningitis or cerebritis, which closely simulates Hydrocephalus. If the attack rapidly supervene on the exciting cause, they merely hasten the development of, and do not produce, water brain fever, in those in whom a latent predisposition lurks.

If we attentively consider the state of the brain in early infancy, its large normal size compared with other organs, and if we bear in mind how easily its functions may be deranged and suspended by the

continuous noxious impressions which are, from the moment of conception, through the whole period of gestation and lactation, acting upon it, through the nervous sensibilities of the mother; if, moreover, we recollect how easily its delicate formation succumbs to the morbid effects of impure air, vitiated food, improper and scanty clothing, lack of cleanliness, inattention to the daily evacuations, early sipping of spirituous potations, administration of sedative and quack nostrums, influence of the passions, inducing excess of joy or grief, too early cultivation of the mental and neglect of the corporeal powers; residence in damp, badly ventilated, badly lighted, and badly drained houses; and these tenanted in numbers so large that the same polluted atmosphere is inhaled over and over again; if, I say, we recollect these things, and bear in mind the proneness of parents, of relatives, and of friends, to pursue the same plan in the education and rearing of all their children as shall have marked their course with their first-born, we shall have no occasion to attribute the rapid increase of the disease, or its too fatal tendency, either to hereditary predisposition, to blows, or falls, or any other suddenly exciting agent, but we may safely refer it to its legitimate source,—inattention on our part to the wants and capabilities of infantile life, ignorance of the physiological laws which regulate its action, and the apathy and culpable disregard shown by our rulers and legislators, to the exigencies and requirements of a too densely populated and impoverished district.

The latent causes of Hydrocephalus I take to be a strumous or lymphatic constitution, engendered not infrequently by a too highly excitable condition of the nervous system in the mother, which deprives the fœtus in utero of its due supply of nutrient aliment. This serous habit of body may also result from the want of suitable dietary, clothing, and out-door exercise, so that any previous morbid impression made upon the infantile frame acquires from these causes increased activity.

That it mainly depends upon ourselves, and our modes of living to avoid the numerous ills to which flesh is heir; and that remedying our own bad habits, improving our dwellings, and paying more rigid attention to the quality of the food we eat, are capable, in the majority of instances, of eradicating and preventing a host of formidable maladies, amongst which diseases of the nervous system occupy a prominent place, is indisputably proved by the facts collected by numerous authors who have minutely investigated the subject of infantile Hygiene.

The "average mortality of infants amongst rich and poor is about 1 in every 4½ before the end of the first year of existence;" but to show how infant mortality depends in a great measure on a correct knowledge of the laws which govern infantile life, it is recorded that "about a century ago, from the bad management adopted in the London workhouse, *twenty-three out of every twenty-four infants* perished under one year of age. And this awful sacrifice of human life was allowed to continue until the inter-

ference of Parliament compelled the adoption of an improved system of management, when the deaths speedily were reduced from 2600 to 450 a-year."* Another instance of a more recent date, strikingly illustrates the influence of hereditary habits in entailing hereditary misery on infancy, and of the ease with which such tendencies, too often unjustly attributed to the unalterable decrees of fate, or to a taint of constitution, may be averted by judicious attention to the requirements of infantile life. In Mr. Maclean's recent account of his visit to St. Kilda, the most northern of the Hebrides, he relates that eight out of every ten die between the eighth and twelfth day of their existence, in consequence of using their huts as manure sheds. Whilst the clergyman living on the same soil, and conforming in every respect to the customs of those around him, except as regards the condition of his house, had a family of four children, all of whom were well and healthy.

That the majority of diseases which fatally affect infancy may safely be referred to causes over which human ingenuity is capable of exercising a remedial control, I entertain no doubt. How materially the future weal or woe of the embryo is influenced by the maternal fears, hopes, or joys. A tendency to disease of the brain is often communicated to the fœtus in utero from the naturally nervous susceptibilities of the mother. This tendency is not the result of a humoral taint, but arises from the intimate sympathetic connection existing between the parent and her offspring. A woman, of naturally strong mind, whilst *enceinte*,

* Vide Combe on the Management of Infancy.

may, from even temporary excitement, endow her offspring with a high susceptibility of the nervous system. Mary, Queen of Scots, when pregnant, was surprised by Darnly and made a spectator to the tragic end of her favourite, Rizio, who was murdered in her presence. Her son, James VI., afterwards James I. of England, born shortly after that event, betrayed through life a natural timidity and horror at the sight of a drawn sword, and exhibited a pusillanimity of disposition totally at variance with the wonted intrepidity of the House of Stewart. "During the bombardment of Vienna in 1809, the terror," says Gölis, "created in the minds of the pregnant females, reacted so powerfully on their children, that most of those who were born after that frightful catastrophe, were seized with convulsions within 10, 20, or 30 days after birth, and died."

But it is not only during the period of utero gestation that the maternal excitement so disastrously affects the offspring; it is also equally powerful and injurious to it whilst at the breast. Tranquillity of mind in the mother is of the first importance to the well-being of the child. "An irritable, passionate, and sour-tempered female," observed Eberle, "is utterly unsuited for so important a charge;" and children have been known to die suddenly, or fall into convulsions, by suckling soon after the nurse has been agitated by violent anger or rage. The following striking illustration of the destructive effects of passion in the mother, on her nursling, is related by Dr. Von Ammon. "A soldier quarrelling

with a carpenter at whose house he was billeted, drew his sword, and rushed upon him in the presence of the carpenter's wife. She, at first, horror struck, remained motionless, but suddenly recovering herself, became furious, and rushing between the combatants, wrested the sword out of the soldier's hand, and broke it in pieces. The neighbours then interfered and separated the combatants. Whilst in this state of excitement, she gave her child, previously in the best of health, the breast. In a few minutes the infant left off sucking, became restless, panted, and sank dead on its mother's bosom."

The mortality in the offspring of parents who have undergone much privation, misery, or mental inquietude, is much greater than in those who have been differently circumstanced during the period of pregnancy. As the mothers of illegitimate children are generally more exposed to the united operation of all these deleterious agencies, so we find a proportionate increase in the number of deaths amongst their progeny. In Berlin, for example, "the still-born out of one hundred illegitimate births, were, during the half of the preceding century, three times more numerous than the still-born out of one hundred legitimate births."

Let us compare the number of deaths in early infancy from brain diseases, in a manufacturing with a rural population. We shall find the former nearly one-third more than the latter. The following instructive table I have extracted from the last Reports of the Registrar General. The manner in which

these statistical documents are got up is highly creditable to Mr. Farr; their utility to society will be immense. In the disease under consideration, they in some measure declare its source, and point to its remedy, viz., better ventilation, better drainage, and, to use a vulgar expression, more elbow-room.

TABLE

EXTRACTED FROM THE FIFTH REPORT OF THE REGISTRAR GENERAL.

Number of deaths in four years in twenty-five Town-districts and the Metropolis, as compared with the number of deaths in the following counties (excepting the towns of Bristol, Clifton, and Norwich), viz., Cornwall, Devonshire, Dorsetshire, Somersetshire, Wiltshire, Essex, Gloucestershire, Norfolk, Herefordshire, Suffolk, Sussex, and Westmoreland.

		Town-districts and Metropolis.	Counties.
Population 1841		3,759,186	3,440,501
Deaths from all causes..... ..		395,893	262,414
Ditto	Cephalitis	3,860	1,461
Ditto	Hydrocephalus..	12,656	4,409
Ditto	Convulsions ...	28,882	11,237
Ditto	Apoplexy	6,097	5,107
Ditto	Paralysis.....	5,299	4,654
Ditto	Insanity	452	308
Ditto	Consumption ...	64,449	48,252

A glance at the above is sufficient to establish the importance of wholesome air in the prevention of this and other brain diseases, which, if we include convulsions, are nearly three times as fatal in towns as in the agricultural districts. Nor does it require much logical acumen to prove that, even amongst the rural population, a considerable amelioration might easily be effected, which would produce a corresponding

decrease in the aggregate amount of mortality; for the low huts, want of cleanliness, and meagre food now in vogue amongst the descendants of the once stalwart frames of the yeomanry of old England, encourage the insidious inroads of that destructive enemy of mankind—pulmonary consumption—to an extent not much inferior to what is found in manufacturing towns, as may be seen by reference to the aforenamed reports. That art, properly directed, can do much to mitigate and diminish human suffering, is, I think, established on irrefragable evidence. But that it should be able to accomplish such delightful results as followed the introduction of a more rational system in the treatment of infants in the Lying-in-Hospital of Dublin, is both an incentive of gratitude to the Giver of all Good, and an incitement to continued perseverance in our humane endeavours. On the authority of Dr. Joseph Clarke, it is reported that at the conclusion of 1782, out of 17,650 infants born alive, 2,944 died within the first fortnight. This extraordinary and awful fatality was speedily reduced to about one in every $19\frac{1}{2}$ instead of one in every six, by the adoption of a better mode of ventilation alone; and, by a further improvement in this respect, combined with greater attention to the comfort of these hapless and forsaken outcasts, Dr. Collins had the extreme gratification of finding the cases of trismus, or lock-jaw, reduced to three or four annually; whereas, previously, nineteen-twentieths of the deaths were occasioned by this disease.

I now come to the question, is Hydrocephalus an hereditary disease? On this subject I am aware that my sentiments are at variance with most writers on this disorder. But untrammeled by the opinions and dogmas of the schools, I am free to confess that all my reading, study, and observation, have tended to impress me with the strongest convictions of the fallacy of this doctrine. Nay, more, I am firmly persuaded that it exercises a silent but irresistible and dangerous influence over the minds of its believers, so that in certain intractable affections like Hydrocephalus, cancer, or consumption, the very name of the malady induces in them despair, benumbs their perceptive and inventive faculties, and too frequently renders their curative efforts futile and abortive. No reflecting man would attempt to prescribe for the removal of any given disease, and believe at the same time that he has even a remote chance of success, if he were previously convinced that the seeds of such disease were inherent in the constitution, and had entered into its primitive organization. The utmost advantage which such an individual could expect from his endeavours would be, that he might perchance palliate symptoms,—not cure the disorder. I should as soon believe it possible to remove an eye or a leg by the internal exhibition of certain medicaments, as to remove a disease which, if hereditary, must be considered as part and parcel of the animal economy.

I do not mean to assert that certain diseases may not, or cannot, be hereditary. Man is fallible.

All that my remarks are intended to convey is, that as yet we are destitute of satisfactory or convincing proof that any are so. To the unprejudiced mind, there is overwhelming evidence in favour of the opposite conclusion. Do we assume Hydrocephalus to be hereditary, because it has already manifested itself in two or three instances in the same family? Here, indeed, we have proof of family predisposition; it may be of congenital origin; but no direct or conclusive proof of hereditary transmission. That the parents were free from the disease, is presumed from the fact that they have survived the period of its usual attacks, and have never manifested symptoms which betokened its presence. How then could they transmit that which they did not possess? May not the persistence in the same mode of life, a continuance in the same unhealthy locality, and addiction to the same vicious propensities, have induced a congenital deficiency in the stamina of their children, which would have been entirely prevented by the adoption of a more rational and salubrious style of living? And how do the advocates of the hereditary doctrine reconcile the fact, that a woman shall have several healthy children born to her, each of whom shall arrive at maturity robust and healthy, and yet lose rapidly in succession, by Hydrocephalus or convulsions, all who may be born after a certain period?—as I have witnessed in some well marked cases, where females, formerly temperate, have given themselves up to ebriation. If the disease be hereditary, how happens it that the former children

escaped? But if it be, as I can readily understand, a congenital vice, induced by the intemperate habits of the mother, then we have a solution to the problem, in the diminished vitality of the parent. If Hydrocephalus, or gout, or consumption, were really hereditary diseases; or if, as a recent writer would infer, "most disorders are so, the causes of which escape our finite comprehension," then indeed it would be found no difficult task to prove, to mathematical demonstration, that there cannot be a single individual alive at present, who does not inherit and has not embodied within him the seeds of at least a dozen different maladies. Very comfortable reflection for a poor creature afflicted with the blues!

Our researches and observations are too limited and finite to enable us to appreciate and distinguish the all-sufficient, but not "obvious peculiarity, of air, food, or water, as a probable cause," or the influence of continued mental sympathy, in inducing in members of the same family similar affections at similar ages. From the statistics on phthisis we learn that upwards of 60,000 individuals die annually, in England and Wales, from consumption alone; and it will require no very fine calculation to prove that, if hereditary, its influence must have been transmitted over and over again through every family in the British Isles, and with such overpowering force, as to stifle the germ of life at its onset.

Further, if we examine the statistics of New York, in Dr. Brigham's work on diseases of the brain, we see an alarming increase in affections of that organ,

more especially in the form of Hydrocephalic fever, but which unquestionably owe their frequency to other causes than a humoral taint of system.

	1805.	1835.
Population of New York.....	75,570	270,089
Deaths from Inflammation of the Brain	17	150
,, Dropsy ditto (Hydrocephalus)	16	382
	33	532

Thus, whilst the population of this flourishing city has barely quadrupled itself in 30 years, the deaths from inflammation of the brain and Hydrocephalus have increased twelve-fold. In London, during the four years from 1838 to 1841 inclusive, 7,013 children perished of this disease. Coindet stated 20 years ago, that the mortality in France, from this one affection, amounted to nearly 24,000 annually. Phrenitis, apoplexy, paralysis, and convulsions, destroyed in London, in the same four years just alluded to, 21,384 persons,—making nearly 30,000 deaths from disorders of the brain alone, the majority of which have been occasioned by the poisonous agency of overcrowded tenantcy on the juvenile population.

Before we attribute the increase and fatality of affections of the nervous system to hereditary predisposition, let us solve the important question, how far, if this doctrine be true, a city is capable of maintaining an independent existence, should its inhabitants, from any cause, be prevented from forming matrimonial alliances with, or receiving

accessions from, the agrarian population. My own impression is, that a manufacturing town, so situated, would, if the hereditary doctrine be true, cease to be peopled within a century and a half. The Israelites would never have increased and multiplied as they did during their Egyptian bondage and their sojourn in the wilderness, had they been able to transmit diseases to their posterity. Their very safety as a nation depended on the production of a race endowed with every prerequisite for the maintenance of health. Yet diseases, now called hereditary, existed amongst them; and the cure and removal of these engaged no small portion of the attention of their lawgiver, Moses. He doubtlessly foresaw the importance of dietetic rules, to a people who required every advantage which could be obtained from a vigorous constitution, to enable them successfully to accomplish those great achievements for which they were destined. Physicians are too apt to infer hereditary predisposition as the cause of the obstinate fatality of some disorders.

Trismus nascentium was once considered, from its inveteracy, an hereditary disease; but, as has been shewn, no sooner was the origin of this disorder rightly understood, and the remedy—effective ventilation—employed, than the malady vanished, as if by magic. Nevertheless, this disease, with goitre, Plica Polonica, and stone in the bladder, have been adduced, from their repeated occurrence in certain localities, as examples of hereditary taint.*

* Vide Medical Notes and Reflections, by Dr. Holland.

My own observations lead me to coincide with the opinions expressed by the late Sir Anthony Carlisle, that "Hereditary impresses of peculiar forms, of stature, of supernumerary parts, and of complexional colours, happen equally among mankind and animals; and even vegetables are subject to similar influences; but these permitted propagations of trivial varieties are not allowed by nature to *transmit diseases*,—an evil which must have directly led to the extermination of the ill-fated race. On the contrary, every deviation in nature from the ordinary standard of the species, is an adaptation to local or temporary conveniences; hence the short stature of men and cattle in sterile alpine regions, compared with their huge growth in fertile plains; and hence the protecting changes of colour in the furs and feathers of animals and birds in snowy regions, all suited to the summer and winter costume of surrounding nature."*

Again, scrofula, one of the most common diseases, and one which, until lately, has been universally considered to arise from previous vice of blood, and to originate most, if not all, those serious and intractable maladies whose principal cause has hitherto eluded the most minute researches of the pathologist, and whose cure has baffled the skill of the most talented, is now by some of the most distinguished surgeons of the day, regarded in the majority of cases not as the consequence of hereditary transmission. In the parish of Marylebone,

* The Means of Preserving Health and Prolonging Life, by Sir Anthony Carlisle, F.R.S. London, 1841.

Mr. Benjamin Phillips found eighty-three children presenting unequivocal signs of scrofula in various forms, and these children were the issue of fifty-eight marriages. Of the hundred and sixteen parents, eighteen were either dead or missing, and of the remaining seventy-eight, *nine only presented any marks of scrofulous affection.* In none of these cases were both parents affected. The children proceeding from these nine families were in number thirty-nine, and of these only eleven presented any of the ordinary forms of scrofula. Of these eleven, three were found in one family, and one in each of the remaining eight. "This evidence," says Mr. Phillips, "appears strongly to favour the conclusion, that if hereditary transmission have any influence on the disease, it does not exist to the extent which is commonly supposed, and which I cannot admit to be proved at all."*

As Hydrocephalus is generally, and, I believe, correctly classified with those maladies which owe their origin and fatality to the strumous diathesis, it must necessarily follow, that if scrofula be not an hereditary disease, Hydrocephalus is not. Take, for instance, consumption, which owes its frequency and destructive tendency not, in my humble judgment, to a previous vice of constitution, but in a great measure to the variable clime of the temperate zone. In the arctic and antarctic regions this malady is wholly unknown to man or to beast. The

* Lectures on Surgery, by Benjamin Phillips, Esq., F.R.S., London Medical Gazette, vol. 25, page 533.

hardships and excessive privations to which Sir John Franklin and his companions were exposed in their explorative journey in the arctic regions, were amply sufficient to have induced this disorder in its most fatal and rapid form, and would unquestionably have done so, had not the pure and invigorating air of the frigid zone, so redundant in material essential to high vitality, proved their safeguard. The sepulchral tones of their voices noticed by Dr. Richardson, at Fort Enterprise, were occasioned by inanition, and not by disease of the respiratory organs, and vanished on the administration of a liberal supply of nutriment. Nor do we find amongst the natural inhabitants of these desolate regions, any tendency to pulmonary phthisis. The Esquimaux, the Greenlanders, and the Norwegians, are, from the very purity of the element they inhale, protected from the ravages of this distemper, and their children enjoy an immunity from Hydrocephalus. Were it not so, or were these maladies dependant on humoral taint, their introduction amongst them would speedily exterminate the whole race, for what consumptive patient could endure with impunity the hardships and miseries of a Greenlander's life ?

In our menageries and zoological gardens, the quadrupeds and birds, which in their native state roamed about in undisturbed security, often suffering from the most intense effects of hunger, and exposed to all the vicissitudes of the weather, have been generally considered, whilst in this state, exempt from the disease; but no sooner are they trans-

ferred to the busy haunts of man, and placed in situations of suddenly varying temperature, where the atmosphere is loaded with all kinds of impurities, notwithstanding the care bestowed upon them by their owners, whose self-interest alone is sufficiently powerful to prompt to this duty, but they frequently fall a sacrifice to tubercles of the lungs. Hence I believe I am fairly warranted in concluding, that it is to the condition of the atmosphere that we must principally look for the concealed cause of the serous diathesis, out of which so many dangerous and fatal maladies arise. If, as Dr. Duncan has justly shown, "a deficient supply of pure air be withheld, death must inevitably occur much sooner than otherwise would arise." Each individual requires for the daily maintenance of the healthy composition of the blood, 600 cubic feet of pure air; yet how few enjoy this luxury! rather do not the vast majority within these *highly favoured realms* daily inhale a similar amount of a highly tainted atmosphere? Can we then wonder at the enormous excess of diseases of the respiratory organs, or of the nervous system?

To me there does not appear anything extraordinary that consumption or water brain fever should abound so largely in the northern temperate regions, and that they should prove so fatal in their career, when the chief pabulum of animal life, the element most essential to its existence, from its admixture with so many noxious ingredients, is incapable of

maintaining the human machine in a high state of vitality.

Every one must be familiar with the circumstance of poisonous emanations suddenly overpowering the most robust in close ill-ventilated situations; but the mortality which took place in one night in the black hole of Calcutta, from a number of persons breathing the same atmosphere in a small room in a high temperature, is unparalleled. Out of 146 individuals compressed within a space where not more than 5,000 cubic feet of air were supplied, and this inhaled for several successive hours, until it became no longer fit for human support, twenty-three only were alive next morning, and of these most were attacked with a species of low fever.

Directors and managers of public seminaries have a heavy responsibility attached to their office. The records of schools, public and private, furnish us with valuable data on which to found conclusions as to some of the exciting causes of this malady. An examination made into the quantity and quality of the diet of the scholars, the time devoted to study and to relaxation, airiness of the locality, state of the drainage, size of the sleeping apartments, mode of ventilating the building, the treatment of the pupils by their teachers, the abuse of corporal punishment, will show that to the operation of one or more of these causes may often be traced the occurrence of water brain fever in the institution. In Ackworth school, for instance, where the diet of the children

until very lately was too exclusively vegetable; where proper attention was not paid to daily ablutions, all the male children* washing themselves in one large trough without a change of water; where the scholars were excessively exercised in mental labour for eight and a half hours daily, with no yearly vacation or seasonable relaxation; where the sleeping apartments were too crowded, and corporal punishments rigidly enforced, Hydrocephalus proved a fatal visitant amongst the inmates of the institution. Out of seventy-one deaths which have occurred in this establishment between the years 1781 and 1842, eighteen, or one-fourth, have resulted from affections of the brain; and nine, or one-eighth, from pulmonary consumption. A beneficial change has latterly taken place in the management of the institution, and it will no doubt be attended with a corresponding diminution in the annual mortality.

Among the exciting causes of water brain fever may be enumerated all those agents which unduly excite the nervous system, or irritate it by long-continued action. Too close application to learning, worms in the bowels, the exanthematæ, or eruptive

* The number of male scholars in the institution usually ranged betwixt 160 and 180. The females amounted to 120. The new regulations do not admit so large a number into the establishment. I believe the average has been reduced to 260; viz., 150 boys and 110 girls. If this be the case it is a wise regulation, as nothing is more frightful to contemplate than a severe epidemic breaking out in a large and over-crowded public seminary. The consequences cannot fail to be disastrous.

disorders, functional or organic derangement of the kidneys, suppression of accustomed evacuations, blows, or falls, the custom, too prevalent in large seminaries, and which cannot be too strongly condemned, of striking children over their heads or boxing their ears,* (a practice in which many who have the tuition of youth are apt to indulge,) are amongst the more prominent of the exciting causes. Gölis has also shown that many cases of acute Hydrocephalus are brought on in the following manner. Children already low in their vitality have drunk a glass of wine, beer, spirit and water, or received a blow, from any which noxious impression a healthier child might rally with facility after a slight fever, as in a debauch; but in them the constitution being imbecile, succumbs to the impression as to a poison, and the phenomena are all those of embarrassment, beyond the control of the vis medicatrix, or conservative power of nature.

* This brutal practice ought to receive from parents the most positive denouncement. Every master guilty of it I would have punished with the immediate removal of his scholars, or, if in a public institution, by his dismissal.

CHAPTER V.

MORBID ANATOMY.

After consulting the various conflicting authorities through their inquiries into the post-obit appearances, which they have adduced respectively to support or confute the inflammatory doctrine, and squaring their experience with my own investigations, I can come to no other conclusion, than to infer that too much importance has been attached, as well to the existence as to the non-existence of certain signs, which, as resulting from other affections, have been wont to be considered as tokens of previous inflammation. A careful comparison of the innumerable cases which have, after death, presented no positive signs of inflammatory action, with those also very numerous cases which have manifested such signs, will serve, however, as matter for deep consideration and elucidation to those who choose to view this malady in the light in which I have felt it to be my duty to present it to my readers, viz,—as an idiopathic nervous fever of infants, strongly allied to the febris lenta nervosa of adults.

To enumerate a variety of cases, in which limpid effusion, softening, slight opacity of the membranes,

either on the surface of the membranes, above or at the base of the brain, the bronchial, thoracic, or abdominal signs of tubercular deposit, or granular disease, is, in this view of the pathology, less important, and almost unnecessary. For I should no more expect to arrive at just notions of the pathological condition of its admonitory and subsequent stages, by meditating upon the accumulated and curious statistics furnished by necropsy, than I should expect to arrive at a true knowledge of the essence of any idiopathic fever, simply by contemplating its ravages after death.

Selecting the course and consequences of fatal nervous fever for further illustration, or miliary fever, it may be asked, whether these or other well-known types of fever do not both destroy with and without the post-mortem appearances of inflammation? Is not effusion in the ventricles, and softening, one of the most common results of fever occurring in the serous diathesis? I know of no fever which may not in its progress develop inflammation in any of the important vital organs. Nor do I see anything extraordinary in such phenomena being most frequent in the brain. The time has passed by, never, I sincerely hope, to return, for physicians to select the brain, the mucous membranes, the liver, or any single organ, whereon to fasten all the obloquy and mischief of the condition denominated fever. And as it is now matter of notoriety, that idiopathic fever, whether synocha, typhus, synochus, inclusive of all their countless modifications, may be more or

less inflammatory, congestive, nervous, erethismal, eruptive; so also the same may be asserted of Hydrocephalus. No term was ever so infelicitously introduced to designate disease, nor has ever led to more error, more ingenious, but useless controversy, or to more unsatisfactory innovations in practice.

In the gradually advancing condition of more perfect ossification, when the more intimate continuity of structure between the dura mater and the pericranium is in a great degree cut off, Hydrocephalus is said no longer to beset the path of the juvenile adult, simply because, although the adult may have the same condition of blood, the same strumous diathesis, and the same high susceptibility of nervous system, he will not have the readily yielding texture of the soft contents of the cranium, nor the same facility of hyperæmial condition of the external and internal blood-vessels of the cranium, and, therefore, not manifesting those early symptoms which Dr. Cullen denominated Hydrocephalic apoplexy. The fever of such adults will maintain the name of febris lenta nervosa, or pure nervous fever. All that has been said touching the contradictory phenomena of inflammatory appearances, confidently adduced as a set-off against those innumerable cases in which such appearances have been wanting, serves only to confirm this opinion; and is so far a proof that Hydrocephalus is not in essence an inflammation, much less a dropsy; but that it may or may not be accompanied with inflammation in its progress,—may or may not lead to

effusion in its progress, just like any other idiopathic fever.

In no fever is the progress of effusion in the ventricles slower than in the Hydrocephalic. Taking the average quantity as three ounces, (and we are justified in that course by reference to the authorities cited below,*) and assuming that some degree of effusion has taken place so soon as the watchful condition of brain is followed by impaired vision, and other slighter apoplectic signs, the disease in its more common form will be protracted twelve days or more from that period. Now three ounces = twenty-four drachms, will only yield two drachms per diem, or five minims each hour. If, however, we assume with Dr. Whytt, that slight effusion has existed even in the admonitory stage, we shall have then more reason to wonder at the tardy, but fatal increments, by which the tragedy is worked out.

The fluid effused into the ventricles in idiopathic Hydrocephalus, as in pure nervous fever, is not unlike the natural halitus exhaled from the serous membrane in health. It is bright, limpid, and rarely

* Whytt estimated the average quantity to be from ℥ii to ℥iii. Gölis the same. Coindet, Bright, and Nasse from ℥j to ℥iv or ℥vj. Dr. Copland, in the Dictionary of Medicine, states that in all the cases he has examined, he has never found less than ℥viij. This, I presume, is a typographical error, and should have been, never exceeded ℥viij. It must not, however, be overlooked, that in consequence of the hygrometrical properties of the brain, some portion of the fluid may have been imbibed after death; for it is now an ascertained fact, that this organ is capable, by endosmosis, of absorbing a quantity of water equal to its own weight.

manifests any appreciable quantity of albumen, except by the most delicate tests; for traces of albumen may, I believe, always be detected by the ferro-sesquicyanide of potassium. The arachnoid in general secretes very little albumen, unless an inflammatory or erethismal condition of that membrane exist. It may, therefore, be assumed, *cæteris paribus*, that the greater the amount of albumen discoverable by the ordinary test of heat in this fluid, the greater has been the severity of the accompanying inflammation, or the greater probability exists that the disease has not been Hydrocephalus, but some form of phrenitis.

In cases of sudden effusion of blood into the ventricles of apoplectic patients, I have known such patients first to shriek and bring the hand to the head, then to fall on their knees, and request to be supported to a couch or bed; to lose their sight for some minutes before they lose their hearing. "I can't see you, doctor, but I hear and know your voice," was an expression of one such case deeply engraven upon my mind.

Now in Hydrocephalic effusion, between the blindness and loss of hearing, there is often an interspace of three or four days, instead of as many minutes; and yet the quantity of effused *matériel* may not exceed that of the case above alluded to; a striking proof of the slowness of the effusion, and the absurdity of selecting this type of fever, of all others, whereupon to fasten the name by which it is currently known.

If the uncertain quantity of the signs of inflammation or the entire absence of them, as well as the condition of the blood, may be received as proof of the disease not being in essence inflammatory, the same may be said of the varying and limited quantity, and at times the non-existence of the effusion in regard to the crude notions of the first pathologists touching its dropsical nature. And it may be added, that there is not a single argument used, either by the advocates or the opponents of the inflammatory doctrine, that would not equally apply to any idiopathic continued fever.

When pathologists shall have succeeded in determining the real essence of fever in general, then, and not till then, will they arrive at a knowledge of that of Hydrocephalic fever in particular. Till that great discovery shall have crowned the labours of many centuries, the most curious, patient, and untiring necropsist will in vain look for its cause in the decay of a pituitary, or a bronchial gland, or in trivial tubercular deposits, which may be found anywhere, and exist at any period of life, without producing the fatal disease which it has been my task to contemplate.

CHAPTER VI.

ON THE MEANS OF PREVENTION.

In laying down rules for the prevention of the malady, I find myself less embarrassed by the conflicting opinions of authors and commentators. In truth the ground is left to me without a competitor, no one having thought it worth his while to be at once an instructor and an admonitor to mankind. Not that any of our profession would suppose that it is our function to cure diseases and not to prevent them, but rather, as I apprehend, from the belief that there is a general repugnance to listen to the croaking admonitions of distant ills, and that education is not sufficiently advanced in this country, to justify such an attempt as is now made to stave off a growing evil.

When, however, it is considered that taking the mean yearly mortality of infancy by the nine most prevalent and fatal diseases, it has been proved by the statistics of the last few years that one-eighth die of *Hydrocephalus*, it is not only natural to suppose, but common sense loudly proclaims, that it is our duty to teach, if possible, how society may learn to lessen this large sum of human misery.

That the increasing population of this country is one of the most appalling difficulties that ever statesman had to contend with, is universally admitted; and we may see in the reports of our poor law commissioners, that early marriages are strongly reprobated on the score of policy. However incredible it may appear at first sight, yet it is, nevertheless, true, that an advancing state of civilization continually gives an additional impulse to frequency of population. In other words, while mankind are becoming individually less vigorous, they become in the aggregate more numerous, as though it were a provision of nature to make up by prolific breeding for the diminishing vigour of the human race. We see this law exemplified in scrofula, whose victims are often remarkable for fecundity. Any measures which would tend to the improvement of the vigour of the human race, are calculated at the same time to repress this unhealthy increase in the population. The statistics of a rural, compared with those of a manufacturing population, afford a striking contrast, and a tolerably conclusive proof of the correctness of the above assertion. The latter would afford more recruits in a given space of time from a population of a given number; but probably the minor number brought up in the more salubrious pursuits of husbandry, would yield, under an equal discipline, a more effective force if called upon for the defence of their country.

Let us direct our attention in the first place to the fact, that this malady was unknown to Europe until

the early part of the last century. The same may be said of croup. The progress of civilization is yet adding to the catalogue of diseases. Even within the last twenty years, we see a formidable train of maladies making their appearance to exercise the ingenuity of modern doctors. The various species of tic-doloreux, breast pain of women, nervous affections of the womb, and inflammation of the windpipe of adults, (cynanche laryngea,) have only become known to us within the last few years. On the other hand, it is by civilization that we have got rid, in a great degree, of various diseases which were once chiefly destructive in this island. Agues, which are now, for the most part, easily cured and limited to a few tracts of country, were, a few generations ago, fatally destructive, as well in the palace as the cottage. Oliver Cromwell, with all his astuteness and power, had not in his train a single medical man who could arrest the insidious effects of an ague, for which most uneducated peasants in England now recognize a remedy in the Peruvian bark. The Grand Monarque of France, Louis XIV., was indebted to a countryman of ours for curing him of this disease by a similar remedy.

The much boasted triumph of mind over matter has certainly done wonders in this department of our art; but time has shown that such victories have been followed by the development of other forms of disease not before known, and the triumph, when the balance is struck, is rather imaginary than real.

True, we are in our climate neither "afraid of the sun burning us by day, nor of the moon by night," and rarely of the pestilence which stalketh with gigantic pace; yet have we consumption, small pox, and Hydrocephalus,—the last an insidious, but not less destructive enemy, besetting the path of infancy, and snatching off its victims, singly indeed, but with fearful and fatal certainty.

Every interested parent, before all things, ought to know that the serous or pale temperament favours the development of water brain fever. By the serous diathesis, is meant a state of blood* deficient in red colouring matter, fibrine, and their necessary companion, "vitality." Such children are frequently born "vix vitales." The same temperament is marked by laxity of fibre, soft limbs, and high susceptibility of nervous system. That the blood chiefly contains the living principle, is a circumstance which was announced by the *Deity* before man knew his letters, and has ever been confirmed by the advancing discoveries of physiologists. Thou shalt not eat "the flesh with the life thereof, which is the blood," was one of the primitive commandments of God to man. "The voice of thy brother's blood crieth unto me from the ground," is another ancient and scriptural expression, showing the high vitality of this fluid. It will be my business to show that a low degree of its vitality (and I may say a vitality

* A single drop of the blood of such children, placed under the microscope, will prove that there is a deficiency of the blood disks, and that the blood cells are imperfect.

gradually decreasing from generation to generation, from parents to children,) is the manifest cause of the gradual increase of this disease.

It may be adduced as matter of observation, that many of the high phlogistic, or inflammatory diseases of our gross feeding ancestry, have become wonderfully diminished, while those of the serous or nervous temperament have multiplied, and are still likely to multiply, in forms various and multifarious.

I would not wish to shock the feelings of any amiable parent, when I state that this pest to infancy may frequently be traced to parental mismanagement. The flabby, serous, half-blooded, morbidly susceptible parents, daily keeping up and increasing their morbid susceptibilities by late hours and luxury, often procure for themselves all the misery of Hydrocephalic offspring. This is so far from being matter of conjecture merely, that it absolutely admits of proof. Parents, who have lost two, three, or four children, consecutively by this disease, have changed their medical man, from a natural hope that they might at length find a doctor more lucky or more skilful. Had they changed their own habits of life, it would have been more to the purpose. Examine the mother; she will be found to have been languid, reduced in constitutional powers, weak in the loins, and half her time drained by "les fleurs blanches,"* and for

* In popular language, "weakness," the "whites." This affection is often observed in those whose habits of life are sedentary, or who indulge in luxurious idleness, living on a diet and drinks of a highly stimulating kind. "Females also dwelling in cities or large towns,

the most part living a life of artificial excitement. Turn to the father; you will probably find him dyspeptic, yet high feeding. A state of moral and physical calm is unknown to him. Day by day he hurries into business with a head scarcely cleansed by the swilling of two or three half-pints of hot coffee or tea. Anxiety and feverish restlessness mark his diurnal course. At length the evening comes. He dines out, or entertains his friends. Stimulation or preternatural excitement of a forced gaiety of spirits, with the noise and buzz of company, or the cogging and scheming of cards, with all the relaxing and absolutely poisonous effects of hot rooms, and fine and pestilential vapours, with a heavy supper and "something warm before bed," are the means whereby men do their part to prepare for the premature death,—I was going to say murder, —of their offspring, by an infanticide that no power can reach, short of the mighty arm of *Him* who hath pronounced that "Order is heaven's first law." These parents are not gross enough to get drunk. They escape both the stupor and delirium of Bacchanalian orgies. Still, however, they live with their blood in a perpetual state of heat, and their brains in a perpetual state of feverishness. They soon assume the pale visage which characterizes high civilization, the thoughtful brow, the obscure severe

where they are exposed to the contaminated atmosphere of crowded streets and houses, particularly if personal cleanliness be not observed," are peculiarly obnoxious to leucorrhœa.—Practical Observations on Leucorrhœa, Fluor Albus, or Weakness; by G. Jewel, M.D., London, 1832.

gravity, alternating with the occasional grin of politeness, and the mixed expression of the cunning of the fox, not without the speculative ferocity of pursuit said to belong to another more formidable animal. See him plodding with haste through the streets, as if escaped from Gomorrah. This is your modern man of business; or rather, I would say, the man who does not know that it is his first business to see that he makes a good foundation for the future health and happiness of his progeny, by taking care of that most inestimable of earthly blessings in his own proper person. The man, in fact, who, when a school-boy, carried his slate and satchel, and learned the second commandment, but has not yet succeeded in understanding it.

That society, in its present complex state, facetiously characterized as "society three in a bed," suffers more wear and tear of mind than was for the most part known to our forefathers, is, I fear, too evident to admit of denial; but after all, our remedies are chiefly in our own hands. Young married people learn this soon enough, without adding to the misery by ill-regulated habits. There is reason to believe that there are rare forms of disease peculiar to those whose minds have been largely cultivated, and as unsparingly exhausted by extensive draughts on the joint energies of mind and body. We learn from the earliest records of medicine, that it was inferred by the first philosophers, who took the initiative in this branch of wisdom, that the primitive ages neither possessed nor required

this mode of perpetuating longevity. Nevertheless the early races of mankind, unassisted by physic and physicians, were said to enjoy a vigorous condition of health, owing to the simplicity of their habits, as yet uncontaminated by indolence and luxury.

Were parents half as anxious to transmit to their posterity sound minds, holding their sovereignty within sound bodies, as they are to accumulate and hand down to their descendants that very precarious and uncertain good, "worldly riches," they would be much happier in their day and generation. The immortal Locke recorded in his time his strong convictions of the inestimable advantages of a hardy system of nutrition and education. Not that he advocated the rude severities of a Lacedæmonian system, but a just mean, guarding against a coarse brutality on the one hand, and an enervating effeminacy on the other. The warm nursery, the cockering of children with all sorts of indulgence, the over anxiety that not even "the winds of heaven should visit their faces too roughly," the habit of allowing over stimulating and relaxing slops, the extreme cautiousness practised in their clothing, relaxing effects of feather or down beds, and many other errors, were pointed out as common sources of a defective constitution. It did not escape the comprehensive mind of this celebrated philosopher, that hardiness and vigour of the human constitution depend more on the early habituation of the youthful frame to cold and to exposure to the elements, and to invigorating exercises in the open air, than upon

any medicine that can be supplied by the skill of the physician. "For," says he, "another thing that is of great advantage to every one's health, but especially children's, is to be much in the open air, and as little as may be by the fire, even in winter. By this he will accustom himself also to heat and cold, shine (sunshine) and rain; all which if a man's body will not endure, it will serve him to very little purpose in this world; and when he is grown up, it is too late to begin to use him to it. It must be got early and by degrees. Thus the body may be brought to bear almost anything. If I should advise him to play in the wind and sun without a hat, I doubt whether it could be borne. There would a thousand objections be made against it, which at last would amount to no more, in truth, than being sun burnt. And if my young master be to be kept always in the shade, and never exposed to the sun and wind, for fear of his complexion, it may be a good way to make him a beau, but not a man of business. And although greater regard be to be had to beauty in the daughters, yet I will take the liberty to say, that the more they are in the open air, without prejudice to their faces, the stronger and healthier they will be; and the nearer they approach to the hardships of their brothers in their education, the greater advantage will they receive from it all the remaining part of their lives."*

* Some thoughts on Education, by John Locke, Esq.

The analogy between such delicate children and the tender exotics of our nurseries is sufficiently striking. A two-fold discovery seems to have been recently made by our gardeners; 1st, That many plants of foreign origin, which it had hitherto been the practice to retain in heated conservatories, really do better in the open air; and, what is more instructive for our present purpose, that hardy indigenous shrubs, by being habituated to the care usually bestowed on exotics, gradually degenerate, becoming sickly and deficient in energy of growth.

I can hardly expect my unprofessional readers to enter upon a minute inquiry into the functions, whereby the human frame is nourished and renewed. An outline of the process, however, can easily be understood, and may be essential to bring home to their conviction the truth of my remarks. Suitable food, well masticated, is delivered to the stomach for the purpose of primary digestion; but even this process is implicated with a free, vigorous, healthy motion of the lungs and assistant respiratory organs; and for its highest state of perfection, both as to the demand and expenditure of the material taken in, it requires the most unrestrained and general exercise of all the limbs and muscles of the body. When this food, now called chyme, thus partly digested, has passed into the second stomach, or duodenum, it mixes with two juices, derived from glands, the bile from one very large, called the liver, and the pancreatic juice from the pancreas, an organ weighing in health not more than from two to three

ounces, and sometimes called sweet-bread. These juices, mingling with the chyme, are instrumental to what may be called the second digestion, and are, in reality, chiefly taken up into the system, along with, and as part and parcel of the chyle. Now it may be perceived, that for bile to enter the system properly mixed up, and prepared as an integral part of the food, is perfectly natural. It is only when it gets into the blood without having assisted in second digestion, that it makes the eyes and skin look yellow, and gives rise to the symptoms called "bilious." This chyle, produced by second digestion, is now imbibed through the coats of the bowels by means of rootlets, like those of trees; it travels through the glands of the bowels, which are called "mesenteric," and these becoming fewer and larger by convergence, ultimately end in one large vessel in front of the middle line of the spine or back bone. Through this the chyle, which may now be called young blood, ascends like the sap of a tree, till it gets as high as the root of the neck on the left side, when it suddenly makes a turn forwards and downwards, to empty itself at the junction of two great veins, near the right side of the heart. It has still to be propelled through the lungs, and to be purified by a casting off of carbon or charcoal, along with the breath, before it can become true blood, in which state it is brought back to the left side of the heart, to be propelled all over the system by the ramifications of arteries, from the centre to the surface, giving out caloric by a sort of animal

combustion, or union of charcoal and oxygen, even from within the smallest vessels of the skin. Thus by immersion of the arm in lime water, contained in an oil silk bag, the same effect is produced as though one breathed in the lime water through a syphon.

From this very brief sketch, it will be seen, that the energy of digestion, like the energy of combustion, will depend mainly on the liberal supply of oxygen through the lung; and that is the principal point with which I have to deal, in establishing my preventive system against water brain fever.

It may, perhaps, suffice that my parental readers should understand that high vitality is a condition in which the fluids and solids are in their happiest state of perfection, and that low vitality is attended with an imperfect condition of the material of the body, often from the birth. The gardener, when he gathers up his small bed of young plants for drilling out, recognizes a number of them as having a low vitality, and rejects them accordingly. We cannot do that, though the ancient Lacedæmonians did. They barbarously destroyed such of the male children as were reported by the elders to be "deformed, tender, or weakly," when born. We, however, must make the best of our plants, such as they are. The disease called scrofula or struma, has for its main cause this low vitality. Tubercles in the lungs, which, when ulcerating, constitute pulmonary consumption, are, according to the best authorities, nothing more than a deposit of a whitish

substance in the lung, under a low vitality. Hence, in persons in whom a consumptive tendency had never before betrayed itself, some additional depressing circumstance, as grief, disappointment, or worldly loss, have sufficed to throw such persons into a "decline," as the phrase is. The same disease has also been induced in healthy rabbits, by confining them in cold, dark, damp, close situations, and supplying them with innutritious food.

A late author has graphically contrasted the two most opposite states of high and low vitality.* It is almost impossible to define by words the condition of the body denominated, health, but it may be assumed to exist when all the visible excretory and secretory functions are performed with ease and regularity; the digestive powers vigorous and active; the arterial circulation moderate and equable; the respiration easy, regular, and free from wheezing; the sleep sound and refreshing; and the mind quick, perceptive, and retentive, capable of enduring adversity with cheerfulness, prosperity with calmness. On the contrary, man may be said to have lost this healthy condition of body when the functions of the same are performed with pain, uneasiness, or irregularity; when labour easily fatigues; when sleep, however sound or long continued, becomes unrefreshing; when the most nutritious food ceases to invigorate; or when the mind, from slight causes, is unduly excited or depressed.

Highly vitalized animal matter readily makes highly

* Conspectus Medicinæ Theoreticæ. J. Gregory, M.D., 1830.

vitalized animal matter. Weakly vitalized animal matter is prone to make weakly vitalized animal matter. The human frame, in a hardy condition of high vitality, throws its impulse into the food taken into it, and soon makes it, (allowing for excretion), part and parcel of itself. So also the weakly human body less energetically makes the food, through the process of digestion and assimilation, part and parcel of itself; but if it imparted to it the impulse of high vitality, it would make it something more than itself. For perfect vitalization of food are required vigorous mastication, vigorous deglutition, vigorous digestion, vigorous chylification, vigorous assimilation, and vigorous excretion. I believe that three generations, under good management, would suffice to eradicate scrofula from any family; and that less than three will, under unfavourable habits and circumstances, suffice to introduce the same taint, (of which Hydrocephalus is only a form), into the most notoriously healthy breed in this island, or any other country. "If," observes Sir James Clark, "an infant born in perfect health, and of the healthiest parents, be insufficiently or injudiciously fed, that is, be nursed by a woman whose milk is inadequate in quantity or quality to afford proper nourishment, (it may be too rich and too exciting, or it may not be sufficiently nutritious); or, if the child be fed on other food ill-suited to the state of the digestive organs, or be confined to rooms in which free ventilation and cleanliness are neglected, a few months will often suffice to

induce tuberculous cachexia."* It is to this condition of the system, often termed the strumous or scrofulous diathesis, that the obstinate fatality and insidious character of some diseases are principally owing, and which, in such affections as Hydrocephalus, insanity, croup, remittent fever, consumption, and chorea, often masks the real nature of the malady, or deceives by the most flattering appearances of returning health.

Degeneracy of breed, whether in the human species or in any other, can be mostly traced to degeneracy of habits, or some other unfavourable circumstance which will supply us with a cause for an effect; and as in plants, so also with ourselves, what we are pleased to call a high state of civilization may, in no small degree, lead to deterioration in the vital powers of the machine.

> "Like leaves on trees, the race of man is found,
> Now green in youth, now withering to the ground.
> The following spring another race supplies;
> They fall successive and successive rise.
> So generations in their course decay,
> So flourish these when those have passed away."

There is an instructive fable, attributed to Æsop, which may serve to show the effects of habits and diet through the body on the mind, but it would be impertinent here to do more than refer to it.†

* A Treatise on Pulmonary Consumption, by Sir James Clark, M.D., F.R.S. London, 1835.

† The fable above alluded to, will be found in the history of Sandford and Merton. The powerful effects of active or slothful habits, and of full or spare diet, in altering the disposition and invigorating or enervating the body, are beautifully pourtrayed in

Having, I sincerely hope, impressed on the minds of my readers the necessity of warding off this terrible malady by a timely system of prevention, I shall now proceed to lay down my precepts and plan; and first as regards the parents themselves. Orators, when addressing large assemblies, talk very eloquently about our having received a glorious constitution from our ancestors, which they declare it is our duty, by every exertion and at every sacrifice, to hand down inviolate to our posterity. He who has received such a constitution in his own proper person, has, indeed, to be truly grateful to his ancestors, and can hardly be said to die an honest man, if, by any wilful misconduct, he be the means of deterioration in that of his issue. I think all couples are severally and jointly bound to their good behaviour in this respect by the law of God, though that of man falls short of reaching their transgressions. When we consider how important a pre-requisite health is to success in business, to happiness, and, I will add, to virtue,—for many crimes arise out of the irritability of

the narrative of the two dogs, Jowler and Keeper, the offspring of the same parents. Brought up under very different circumstances, the one in luxurious indolence,—the other exposed to all manner of privation, they exhibit a totally different nature. Whilst the former is sleek and fat, he is, nevertheless, fearful and timorous; the latter, on the contrary, though spare and lean, displays amazing courage and activity. On reversing the discipline and mode of life of each, opposite propensities, and essentially different conditions of body and corporeal vigour result. Each, in changing its active habits and spare food, changes also its active disposition and energy, and becomes pusillanimous.

debility, aye, many more than one dare even allude to,—the preservation of a good constitution seems, after all, to carry with it its own reward.

Let young parents, who want to avoid this disease in their offspring, (and I address myself particularly to young parents who have lost their first or second born by its fearful effects,) look to their own health. Let them cherish a calm of mind and body, as one of the greatest blessings under heaven; let them devote a portion of time for ease and recreation; let them not neglect suitable exercises, especially of the upper parts of the body; let them go out freely, and for as long a time as they can, in the open air; let them practise cold bathing, and daily ablutions, the sooner after rising the better; let them rise betimes in the morning, and by exercise, prepare themselves for the enjoyment and proper concoction of their first daily meal; let them, by early retirement, after a frugal meal, seek to obtain that sweet refreshing sleep, to which those, with stomachs oppressed, and bodies stimulated by spirituous potations, are strangers; let them rather inure their bodies to a system hardier than that to which they were accustomed before marriage; let them beware of indulgence, of luxury, of excess; —and let them, by early habits of economy, prepare an antidote against that worst of all poisons, *anxiety*, with regard to their means of life, a most subtle poison, which kills more than plague, pestilence, and famine, battle, murder, and sudden death, and

which leaves its impress on offspring, by a pre-arrangement of Divine Providence, from generation to generation.

"Quem non vexabat
Lucri perpetua cura."

If the philosopher desire to know where he is to find the greatest possible variety of disease, let him look for it in a nation of merchants and traders, for in that part of the world will be the greatest wear and tear of the human frame. See the Laplander, living on his moss, under all manner of privation. A draught of the reindeer's blood, or a steak from the animal that once was his chief means of locomotion, are rare treats to him. A fish, or even a lizard, are welcome additions to his meal. How apparently wretched his means of livelihood. Yet, I speak advisedly, he has not half the disorders of the civilized European. The elements which we shut out are his safeguards. It is to the free supply of oxygen that he owes the superiority of his digestive powers.

In estimating, however, the effects of climate in large towns, where the air becomes impure, as the necessary result of dense population, we are not to forget that this not only has its effects on the child, but it also acts as a slow and gradual cause in inducing the so-called hereditary tendency, or liability to the disease. "It is scarcely possible," as has been remarked by that distinguished pathologist, Professor Alison, "to observe separately the effect on the animal economy, of deficiency of

exercise, and deficiency of fresh air; these two causes being very generally applied together, and often in connexion with imperfect nourishment. But it is perfectly ascertained on an extensive scale, in regard to the inhabitants of large and crowded cities, as compared with the rural population of the same climate, first, that their mortality is very much greater, especially in early life, and the probability of life very much less; and, secondly, that of this great early mortality in large towns, a very large proportion is caused by scrofulous disease. And from these two facts it evidently follows, that deficiency of fresh air and of exercise are amongst the most powerful and the most important, because often the most remediable, of the causes from which the scrofulous diathesis arises."*

By reference to the statistical table,† extracted from the reports of the Registrar General, it will be seen that the disease is $2\frac{1}{2}$ times as frequent in towns, and, as regards the Metropolis, three times, as it is in the country. Furthermore, by reference to the statistics of different nations, the malady will be found most prevalent in manufacturing towns, and among these, again, it will be found most common where the inhabitants live under the highest habits of excitement, as in London, New York, and Paris. Estimating the increase of population in New York as four-fold within the last thirty years, the increase of deaths

* Outlines of Pathology and Practice of Medicine.

† Vide page 51.

from Hydrocephalus, as calculated by Dr. Brigham, of that city, is twelve-fold. Now unless the cause of this malady be better understood, or the preventive system successfully adopted by parents, at no very distant period one-half of future rising generations will be cut off by this malady. This is no light matter for the consideration of statesmen and philanthropists. Our noblemen and gentry make great sacrifices for improving the breed of our horses, our cattle, and our sheep, while this to us noticeable and most awful deterioration in our race alike escapes the notice of monarchs, legislators, and divines. Is it not a great and melancholy truth, and one that ought to be announced to society, as well by the ambassador of God, as by the physician? Will mankind still shut their eyes against an evil which bids fair to threaten the extermination of the race? Degenerate as the breed in our metropolis and large towns unquestionably is, were it not for the transfusion of the healthy blood of that part of the country or rural population, which is continually pouring in, and mingling its more vital blood by intermarriages, the decay would be still more rapid. For my own part, I cannot but feel astonished at the declaration of modern writers, that at present the rapid increase of this malady is totally inexplicable. To those who are content with nothing short of an anatomical reason for an effect, the explanation may be difficult. In the same sense, it is difficult to account for the simplest facts in nature,—as, for example, why a horse has four legs.

When parents ask me for an explanation, I refer them to their bow pots, and to the languid circulation of the interior gardens in large towns. Preternatural heat, preternatural filth of atmosphere, preternatural excitement. A circumference of twelve inches of soil, by a depth of six, as a terrestrial supply, and a stream of caustic alkali, soot, instead of a more genial celestial influence, wont keep alive your myrtle, your geranium, or your rose. 32.8 square yards to each individual, in a population of 94,488, wont suffice for high vitality in men.

TABLE II.

Showing the population to each square mile in the metropolis, and square yards to each person; also in the separate districts of Kensington and Chelsea, St. James and Westminster, St. Giles, East and West London, city of London, Greenwich.

	Population to each square mile.	Square yards to each person.
Metropolis	26,737	115.9
Kensington and Chelsea.....	8,515	363.8
St. James's and Westminster...	145,059	21.4
St. Giles's	138,988	22.3
East and West London	195,844	15.8
City of London	94,488	32.8
Greenwich	11,348	273.1

It is, however, in Liverpool that this unhealthy condensation of population is carried to its greatest extent. In the most densely populated district of Leeds, proverbially an unhealthy town, the inhabitants are congregated together in the proportion of 193,500 to the geographical square mile on its builded area. In the East and West London Unions, the rate, as stated by Mr. Farr, who considers this

the greatest density attained in the heart of English cities, amounts to 243,000 inhabitants to the geographical square mile; whereas in Liverpool, on the authority of Dr. Duncan, in one small portion of a district, comprising a population of nearly 8,000, the inhabitants are packed together in the proportion of 657,963 to the geographical square mile, or nearly $2\frac{3}{4}$ times the maximum density of London.

TABLE III.

Extracted from Dr. Duncan's work on the Physical Causes of the High Rate of Mortality in Liverpool.

Wards.	Square Yards to One Inhabitant.	Fever Cases to Population. 1 in
Vauxhall and Saint Paul's	19.50	34.06
Exchange and Castle-Street	17.26	32.81
Saint Peter's, Pitt-Street, and Great George-Street	25.49	56.51
Saint Anne's and Lime-Street ...	24.86	109.30
Scotland Road	46.03	77.02
Rodney-St. and Abercromby Sqr.	57.78	237.18
	30.70	55.80

"Every population, observes Mr. Farr, throws off insensibly an atmosphere of organic matter, excessively rare in country and town, but less rare in dense than in open districts; and this atmosphere hangs over cities like a light cloud, slowly spreading, —driven about,—falling,—dispersed by the winds,—washed down by showers. It is not *vitalis halitus*, except by origin, but matter which *has lived*, is dead, has left the body, and is undergoing by oxidation, decomposition into simpler than organic

elements. The exhalation from sewers, churchyards, vaults, slaughter-houses, cesspools, commingle in this atmosphere, as polluted waters enter the Thames; and, notwithstanding the wonderful provisions of nature for the speedy oxidation of organic matter in water and air, accumulate, and the density of the poison (for in the transition of decay it is a poison) is sufficient to impress its destructive action on the living—to receive and impart the processes of zymotic principles—to connect by a subtile, sickly, deadly medium, the people agglomerated in narrow streets and courts, down which no wind blows, and upon which the sun seldom shines."*

Seeing the progress Hydrocephalus and other formidable maladies are making, particularly insanity, which recognizes in a great degree the same chain of causes,—seeing that this particular form of disease has increased twelve-fold in thirty years,—seeing that the paid servant of government officially announces that it makes its greatest strides where density of population is the greatest, and where man, the so called "Lord of the Creation," has an individual and average allotment of an area of thirty-three square yards,†—seeing and duly reflecting that our statesmen are aware that a further limitation of this average area, or a privation of grounds, common

* Mr. Farr's letter to the Registrar General, fifth report, p. 418.

† I have taken the city of London as my standard. In many parts of the metropolis and of Liverpool, as may be seen from the preceding tables, the scale is much lower.

lands, waste lands, inclosures, must mean nothing but a deliberate measure for increasing mortality all over the kingdom on the very showing, statistics, inferences, and assertions of their own officer, who tells them the want of elbow-room already makes the difference of 2.40 to 1.00 in Hydrocephalus alone,—seeing, I say, these plain demonstrative facts, is it strange that physicians turn with disgust from an apathetic legislature, and say to their pupils, "see, my children, with how little wisdom the nations of the earth are governed!"

I know not whether our Government is aware that a late censor of the London College of Physicians, within the last three years, thus concludes his report of another disease of the brain, the increase of which is mainly to be attributed to legislative negligence. It would be idle for statesmen to say they attach no importance to his opinion, for within the same year a committee of their *House of Commons* pronounced his evidence in their own report on the subject of "health of towns," especially deserving of weight on account of the high official situation held by that gentleman in the leading medical corporate body in the nation.

Party politics are beneath the cool, dispassionate inquiry of the physician; and it may be at once avowed that the author, in the candid avowal of his opinions, disclaims recognizing, opposing, or supporting any party. The writer of the following extract is pretty much of the same sentiment. After enumerating the various causes of the progress of

insanity in this country, he gives the following short, pithy, and spirited recapitulation, by way of conclusion. Let factions read it and blush!

"As long as education, manners, morals, and "social intercourse, continue as they now are—as "long as crimes, murders, and suicides, are seduc- "tively detailed and daily furnished to the public, "through a thousand channels, for the purposes of "private gain—as long as the perpetrators of crimes "and of homicides are held out, both on the stage "and from the press, as heroes of their day—as long "as the overthrow of moral and religious principles, "and the infection or contamination of the public "mind, are made objects of gainful speculation, "into which persons in place or authority are not "considered dishonoured by entering—as long as "the streams of moral pollution are allowed to flow "without either strenuous, or well-directed, or com- "bined efforts to confine or to counteract them—as "long as the most instant and efficient agents of "self-destruction are openly sold in every street, at "little or no price, and to any purchaser without "either 'let or hindrance'—as long as the struggles "of great parties in politics and religion absorb, in "connection with the details of every vice and every "crime, the public mind, each party endeavouring "to depress and ruin the others, without regard to "the general weal—as long as provision for the "pecuniary wants of the state, and the power and "patronage of office, constitute the chief objects of "governments—as long as justice is within the reach

"only of the wealthy, as laws protect chiefly the "bad, as the weak are unshielded, and the deserving "unrewarded—as long as

———" 'The whips and scorns of time,
" 'The oppressor's wrong, the proud man's contumely,
" 'The pangs of despised love, the law's delay,
" 'The insolence of office, and the spurns
" 'That patient merit of the unworthy takes,'

"shall continue to 'puzzle the will'—as long as "the lives of all classes are endangered, and their "minds distracted, by unprincipled and ignorant "pretenders to medical and religious knowledge, "who are allowed, and even encouraged, to take "advantage of the credulity and fears of the weak-"minded—as long, in short, as moral degradation "and physical destitution exist, and as long as the "safety of the people is *not* the supreme law of the "state,"*—so long, according to this author, and for the most part I heartily agree with him, will insanity in adults, and, it may be added, Hydrocephalus, or nervous brain fever of infants, continue to be frequent and to increase. Either this deliberate accusation, emanating from a censor of the College of Physicians of London, against the aristocracy of this country, is true, or it is false. If false, it ought to be disproved—"a consummation devoutly to be wished." If true, modern statesmen have much, very much, to answer for.

Do we ask what it is that renders this head disease so generally fatal in large towns? I hope

* Dictionary of Practical Medicine, by James Copland, M.D., part 7.—Article, Suicidal Insanity, page 566.

I have furnished the answer—in one sentence, every thing that lowers vitality in our breed. An atmosphere loaded with a thousand impurities—our own views of restless ambition—our vain speculations—disappointed hopes—reverses of fortune—excessive mental labour—watchings and late hours—our greater depravation of manners—our vicious indulgences—our malignant passions—our early improvident marriages,* planned and forwarded in insincerity, and ending in distrust and mortification—the perpetual anxiety of the many for a continuance of daily bread—the total exclusion of the calm scenes of

* Propinquity of relationship, and marriages interdicted unless between members of the same religious persuasion, are powerful causes of insanity, hydrocephalus, and consumption. Hence Quakers, Moravians, and Jews are especially obnoxious to these diseases. The assumed greater average longevity among Quakers has been of late doubted, if not altogether disproved, by the deductions of life insurance offices, and by some it is regarded rather below than above the mean duration of life. If we examine the statistical report of the retreat or lunatic asylum near York, established for the reception of insane persons, belonging to, or in connection with that religious body, the great amount of cases of suicidal mania cannot fail to strike the attention. Of 469 individuals connected with the Society of Friends, admitted into the institution since its commencement, a marked disposition to, or attempt at suicide, was noticed in 62 persons, (nearly one-eighth.)* The union of parents, too nearly allied in blood, is pointedly noticed by Dr. Elliotson, who remarks, that "the rich Jews in this country have the same bad custom of marrying first cousins; and I never saw so many instances of squinting, stammering, peculiarity of manner, imbecility, or insanity, in all their various degrees, intense nervousness, &c., in an equal number of other persons."† Such blood relationship, or marriages between first cousins, are justly discountenanced by the Society of Friends, and proofs are adduced by them that when occurring, insanity has ensued in their offspring. May not inter-

* Statistics of the Retreat, York, 1841, p. 27.

† Elliotson's Human Physiology, 5th Edition.

nature, the want of innocent exercises, sports, and recreations—the deteriorated condition of foods and drinks supplied in large towns—over animalization from excessive tenantcy in the courts and crowded districts, not limited by any regulation of police—the pernicious and wide-spreading emanations from intra-mural burials—the abuse of powerful medicines —want of cleanliness and ablution—high standard of cultivation of mind, low standard of cultivation of body—in fact whatever exhausts or debilitates the parent, rendering the reproductive act imperfect.

I will dismiss that part of my preventive system which immediately concerns the self-management of parents, by a few brief additional observations, first correcting what appears to me a vulgar error now prevalent with regard to diet. The expectation of finding in the innovation of teetotalism, coffee shops, newspapers, and tracts, any means of improving the vitality in the breed of the human race, is one of the greatest fallacies of this age. The immediate benefit of this change to the reckless drunkard, when he is really converted, I doubt not. Honour be to Father Mathew and all the great leaders of this important moral scheme; but let them not do

marriages one with another, in societies so small as the Quakers, &c., to the total exclusion of every other sect, be a prolific source of these disorders amongst them? If Heaven, on account of the dereliction of parents, in a near state of consanguinity, prior to marriage, inflict on their progeny afflictions so direful as insanity, may it not also visit with equal severity (and from all I can gather, I am firmly convinced that it does) those religious societies, who impiously attempt, by human laws, to restrain within circumscribed limits the unrestrainable affections of the human heart?

things by halves; let them uniformly carry out measures of recreation, of exercise, of innocent mirth, of ventilation, and let not their lustrations be limited to the inhabitants merely, but let them be extended to their houses also. By reference to the last report of the St. George's and St. James's Dispensary, Westminster, which I have now laid before me, I find that at a cost of less than £10 in the aggregate, ventilation has been effected in a considerable number of houses in the most confined courts of that city; each ventilator being supplied at a cost of two or three shillings. I heartily wish that each family in such confined habitations in our own, and every other large town in the kingdom, were supplied with the same simple means of purification,* at the same time that their christian bene-

* The plan of ventilation consists in introducing into the window a pane of perforated zinc, which allows the pure air to enter and be gently diffused throughout the room, without producing a draught. To carry off the vitiated air, a square iron tube, measuring from two to four inches in diameter, is inserted into the breast of the chimney, close to the ceiling. Towards the room the orifice of the tube is guarded by fine wire-work or perforated zinc, at the back part of which hangs a piece of oiled silk, which allows the air to pass up the chimney, but prevents any smoke from entering the room. The inhabitants of rooms in which ventilators have been placed, continually express the liveliest gratitude for the comfort arising from the absence of smoke and noxious air, and from the general improvement in the purity of their abodes; the evident amelioration to their health and spirits is a gratifying proof of the benefit to be derived from ventilation. And again, in the same report it states, that "it is impossible to estimate the amount of good that will accrue to the poor by introducing into their residences proper modes of ventilation." In the parishes of St George's and St. James's nearly all the families of the working classes, however large they may be, occupy a single

factors confer upon them the inestimable gift of a missionary bible, which last too often finds its way to the pawnbroker's shop. I think such an additional gift would shew that their christian visitors are really concerned for the health of their bodies as well as their souls.

The intimate connexion between the fresh supply of the most wholesome atmosphere and vigorous digestive powers, is now tolerably well known and understood by all educated persons. Those who live in a confined and heavy atmosphere, either cannot eat coarse wholesome food, or they cannot readily digest it. They soon fall into the habit of eating "relishes." This is ever the case in large towns, and such diet is really consumed in a larger degree by the very lowest classes, than by any other. How blind we must be, not to see that this plan of diet must soon lead to deterioration in the human race! Would not the most obtuse farmer, even although "as dull as the clod he cultivates," tell you what would be the result of relishes and stimulating food

room, which frequently does not measure more than three or four yards square, and low in proportion. To such homes, or to close kitchen cellars, working men bring their young wives on the marriage day. Health of body and of mind soon disappear, and parents see their children born to wither away, or to lead a life of suffering, without the remotest suspicion of the causes of their misery. One woman who had lived for seven years in a cellar with her husband and family, thought her abode a very healthy one for her children, (one of whom was deformed and scrofulous,) because it opened into the area, where they could get air and exercise daily. It need not be a source of surprise that so many of the sick poor apply for relief at hospitals and dispensaries.—*Twenty-seventh Report of St. George's and St. James's Dispensary*, London, 1844.

on his breed of horses and neat cattle? Would not the huntsman tell you what would become of Her Majesty's stag hounds in a few generations on such a system? To point out in detail the various poisonous impressions habitually made upon the human constitution by the various manifold adulterations, substitutions, and deteriorations discoverable in our food and drink, would be to bring a nest of hornets upon us. Generally, therefore, let us content ourselves with observing, that as long as almost every article we eat and drink is deprived of all its more genuine and generous honest qualities, while others, rarely of an innocuous character, often highly deleterious, are imparted to suit the selfish purposes of the vendor, so long shall we be poisoned from day to day, receiving infinitesimal doses of poisons, whose effects, remotely indeed, but not with the less certainty, damage the human constitution in a direct line or descent. Should my readers challenge me to specify to what articles of food or of drink I may allude, I would answer by asking them rather to tell me, what articles are fairly exempt from just suspicion? Even the milk consumed in large towns, independent of dilution, suffers by the system of stabilation adopted for the cattle, which with regard to confinement and preternatural habits, are in the same category with ourselves. I will not be further tempted to enumerate the various sophistications which have become matter of ordinary business in large towns. Thus much will I however take upon myself to say, with regard to the lowest classes in such towns, neither their air,

nor food, nor drink is commonly wholesome; their flesh meat and vegetables are often so stale as to be partially decomposed before they get them; and in the Metropolis as well as in some of the large country towns, even the very water they drink is unwholesome. In this respect a marked amendment has taken place in Leeds since the opening of the New Water Works, though there is still ample room for improvement; not so much as regards the quality of the water, which is salubrious, though hard, but the exorbitant price at which it is supplied.

As the conservation of the peace is the especial function of the Magistracy, so the preservation of the health and comfort of the inhabitants, is the special province of the corporation, who are morally bound, in their corporate capacity, to promote by every available means, the health of those whose interests they are understood collectively to represent, and over whom their jurisdiction extends. Yet how lamentably do they fall short of a faithful execution of their trust! Where are the walks publicly and gratuitously provided for a people, that they may enjoy the calm scenes of nature in an atmosphere no longer black, filthy, and vitiated? Where are the pleasure grounds purposely devoted to those who, immured within the precincts of a manufacturing town, seek to sweeten their labour by the interchange of innocent recreations? Where are the public amusements, provided for those whose minds and bodies, harassed by a continual struggle for subsistence, seek to escape the *tædium* of mental

anxiety, in the relaxing influence of rustic sports and diversions? Where are those temples dedicated to Cloaccina, through whose channels the accumulated soil of 150,000 persons may find a ready egress, and human beings, as they pass along the alleys and the lanes, feel themselves no longer annoyed by its polluting and odoriferous exhalations? With the paltry exception of two or three drains, commenced under the influence of fear from a reigning epidemic, no adequate provision has been made to expurge the town of that pernicious *matériel* which frightfully increases the victims of disease. The result of a mistaken and false economy. Where are the public conduits from which water, pure, sweet, and undefiled, may flow without hindrance into every dwelling, and personal and general cleanliness promoted by the erection of suitable bathing and swimming baths, either free, or at charges within the reach of the lowest inhabitant? When have rewards been offered, and domestic happiness and comfort encouraged, by a judicious distribution of prizes to those who, under every privation, have, by a well regulated system of cleanliness, frugality, and religious deportment, succeeded in rearing a family in the principles of *virtue*, and with a horror of uncleanliness and vice? Surely there is more merit in training the members of one family in the paths of virtue, than in rearing a thousand horned cattle for a prize show. Yet with what difference the successful competitor in the latter instance is treated! Are good citizens worth nothing? Is it

wise, is it just, is it rational to view them as of less importance than the brute creation? If we except the trifling instances of a few praiseworthy individuals, or private speculators, not one of these duties, to their eternal disgrace be it said, has originated with our public corporations. When physicians have lifted up their voice, and complained of these things, what assistance have they received from the *Legislator?* Except temporarily, when our leaders and nobles were quailing, trembling, and panic-struck at the approach of cholera, what board of health have we had formed by government? When medical men have pointed out the means of purifying the air of crowded districts, or of avoiding putrid exhalations, has it not ended in a report of the House of Commons which has lapsed into nothingness? When several of our Metropolitian physicians have from time to time insisted on the necessity of a fresh supply of pure water, what aid has been given to them by the authorities of the realm? When the most revolting and disgusting exhibitions have been perpetrated under the guise of philanthropy, with a view to forward the hallucinations of Mesmer, and have also been countenanced and imitated by professors of the Medical art, who have attempted and even obtruded their obscene performances on the vulgar eye, and have covertly made Mesmerism a means of seduction and rape; what castigation have they received from the hands of the State? When those dæmons of mammon, homœopathy and hy-

dropathy,* the former the fruitful offspring of an impotent and imbecile German physician, the latter of an ignorant and mercenary Lusatian peasant, have stalked through the length and breadth of the land, destruction and misery following in their wake; what board has government instituted, in whom might be confided the task of examining their system, exposing their delusions, and withstanding their unprincipled and deliberate attempts to immolate the victims of English credulity at the shrine of modern

* Towards the close of last summer, a female patient of mine, in delicate health, was prematurely hurried off the stage of life, by submitting to the treatment pursued in the polluted atmosphere of a hydropathic establishment. Another young man at present under my care, has become deranged, in addition to a pulmonary affection, induced by the employment of this dangerous, but highly vaunted, process for the cure of disease.

I have remarked that certain small sects, who have no settled or defined principles of religious belief, are exceedingly apt to be imposed upon by any species of medical legerdemain or charlatanism; quackery flourishes amongst them. Within the last fifteen years, nearly as many different remedies have been countenanced, adopted, and recommended, by a large majority of them, as possessed of infallible efficacy in all manners of diverse disorders. Thus at one time we find them advocating the use of Mustard seed, Egyptian dates, Morrison's pills, Brandy and Salt, Croton oil; at another running after Mesmerism, Parr's life pills, Homœopathy, Hydropathy, Metallic rings. Ladies whose consciences would not permit them to wear a ring as a pledge of conjugal fidelity, have nevertheless vied with each other in recommending the use of a tinseled gewgaw, as a sovereign remedy for every mortal malady under the sun. Such is the credulity and infatuation of some individuals, that I verily believe if any wily German mountebank were to pronounce Guano a specific for consumption or indigestion, we should presently hear that some of these *savants*, under the plea of preventing imposition, were about to propose the establishment of a joint stock association, for the purpose of supplying the public with the *genuine article*, direct from Ichaboe.

speculators in human life? When it has been indicated through the coroners of large towns, that the habitual administration of narcotic drugs, recklessly supplied by druggists of every grade, is not only the cause of rendering many children weak and puny, but also not infrequently of sudden death, what interposition has government made? Has it not left this dishonest department of the pharmaceutical business (the counter-practice of prescribing druggists) as free and uncontrolled by authority as ever? Even in adults, is not opium-eating in our large manufacturing towns, yearly on the increase? To repress the habitual use of narcotics, is no easy matter. With regard to that of tobacco, which has done more to damage the breed of the human race than any single article of luxury, it is neither the policy nor interest of our government to oppose it, although they are too intelligent to exclude the conviction that insanity, Hydrocephalus, and other brain diseases, have gone on increasing with its consumption, as may be seen from the statistics of New York and London.

CHAPTER VII.

CONDUCT OF THE MOTHER DURING PREGNANCY—BAD EFFECTS OF SECLUSION—SLEEP—EXERCISE—DIET—BLEEDING, CAUTIONS RESPECTING IT IN PREGNANCY.

The first precautionary measures, as regards the child, will be directed to the period of his sojourn in the mother's womb, where he may be considered as a part of herself. Every wise and good mother, from the period at which she recognizes this condition of responsibility, will do all in her power to invigorate and harden her constitution. Let the sensual, the imbecile, and the foolish woman consider this condition as one which is so far interesting as to entitle her to every species of indulgence; the prudent wife will ultimately derive more happiness by invigorating her frame through daily habits of industry and simplicity of regimen. Much obloquy is commonly thrown upon writers and practitioners, who insist strongly upon the advantages accruing to the higher classes, by approximating their habits of sleep, exercise, diet, and regimen, somewhat more closely to those of the industrious female peasant. Ignorant and stupid barbarians, the fine lady is ever ready to say, are those medical men,

who cannot see that there is a difference between the blood racer and the dray horse! And it is to be admitted, that whenever rudeness of habits, and coarseness of diet, and exercise to an extent of exhaustion, and unusual exposure to the vicissitudes of temperature, are imposed abruptly upon the delicate, considerable risk is unnecessarily, and therefore unwisely, incurred; but although sudden changes are bad, yet a gradual transition by a system of training, as it were, is perfectly safe. Surely she who finds herself thus embarked in the lottery of birth, has a greater prize at stake than the wrestler, the prize fighter, or the trained jockey. See with what industry, at what privation, nay, in the latter instance, at what danger to health, these men go through a system calculated to ensure success; and shall it be said that she who has to cultivate the germ of her future pride, her happiness, it may be her support and protection, will think it hard to pursue a regimen which implies a little temporary sacrifice of indulgence, with a sure reward of improved health, vigour, cheerfulness, and mental activity? Woman at these periods is entitled to the most tender and intense interest, and care, and concentrated affection of her husband. I cannot see that she becomes less interesting by preserving her domestic habits of activity, of moderate exercise, and of moderate mental exertion. Intense mental exercise is decidedly bad, as is also intense mental anxiety on worldly affairs. Would to Heaven such torture of mind could be

uniformly prevented, since it too often leads to the greatest miseries consequent upon child-birth! Early retirement to rest is one of the chief essentials to natural vigour. If possible, the day should always close by a religious and calm resignation to its events, and the next commence with cheerful hope and confidence in the future. The hours of sleep should certainly not be shortened during this period; if anything, a little increased. The first error committed under the early impressions of the maternal prospect, is seclusion. Nature's rule tends to the reverse. The Roman physician noticed "that for the gravid female, both more air, and more nutriment, and a more vigorous digestion, are requisite for two lives, required to be supported in one body." Ladies are the slaves of fashionable habits, and, for the most part, all they know about their situation is, that it has great inconveniences, that they are very sick in the morning, very apt to be sick at the sight of a meal, very capricious, very irritable, often very wretched, very variable in their spirits and humours, and very apt to be considered invalids throughout the greater part of their pregnancy. Increase the supply of air, this will create an increase of the demand for food, and this again will carry with it a gradually improved digestion, if due exercise be not neglected. For, in truth, the above mentioned train of symptoms arises from a morbid susceptibility of the nervous system, in a weakly condition of the digestive organs, not answering properly to the new demand

made upon them for supply. Where this demand is duly honoured, as in the vigorous peasant, the periodic critical sickness either does not occur at all, or is only temporary. The more highly susceptible the nervous system, and the more morbidly irritable the condition of the generative system, the more obstinate will be this distressing affection. The more epicurean, the more sensual, (the more delicate, as the phrase is,) the female, the more liable she is to obstinate and unmanageable breeding sickness. Many women commit an egregious error in supposing that the paramount duty of a good wife consists in being stay-at-homes; so they hardly ever cross the threshold for fear of being considered as gadders about. Such women will say with no small pride and exultation, that so many weeks have passed, and they have never left the house; that nothing goes on right in their absence; and they, no doubt, bring themselves to a thorough conviction, that thus to immure themselves is a necessary sacrifice, on their parts, for the prosperity and happiness of their husbands and families. Let a few, a very few years pass by, and they will awake under a broken-down constitution, to the miserable reflection that they have indeed made a sacrifice, but to no useful purpose; for their maternal protection will be prematurely lost to their weakly offspring, and they themselves will, perhaps, have to delegate their duties, by reason of infirmities, to very unfit substitutes. They will find that they have been mere hydatids liberating from the im-

prisonment of the womb a family, more or less numerous, without a chance of seeing them, much less their descendants in the second degree, exercising the functions of parents. History will prove that the mothers of our greatest divines, heroes, statesmen, solid lawyers, and philosophers, (I will not say poets, for a high and sometimes morbid susceptibility too frequently determines the poetic bias,) have been remarkable for the energy of their minds, and high vitality of their constitutions; and it may be added, for the simplicity of their habits of life.

Briefly, then, to condense my recommendations for the self-management of pregnant women, let me lay down the following rules. Walk out of doors, or admit into your apartments an extra supply of fresh air before breakfast. Do not take a breakfast till it can be enjoyed, no matter whether early or late. If too languid to rise early, have the windows thrown up, and sit up in bed, first being partially dressed for that purpose. Solicit the functions of the bowels daily after breakfast. Dine early and on simple dishes. Habituate the system to exposure to the air. Daily in fine weather seek the environs of the town, and enjoy the freer air to be obtained there. Hesitate not to refresh the muscular frame by the recumbent position, under a degree of exercise barely on this side of fatigue. Shrink not from the daily household duties, so long as strength avails for them. Use a diet and drink which strengthen, without over excitement.

" For what remains, choose viands light and good,
And, chosen well, be sparing of your food;
Lest to the best too constantly inur'd
You bring new maladies ere old be cur'd;
Your stomach, labouring with the weight you bear,
Requires but little of e'en the lightest fare;
Avoid too much of bitter, salt, or sour,
Nor fruits unripe, nor sallads raw devour;
Yet, in whate'er you take consult your taste,
The sweetest food is easiest to digest.
Choose you the softest; Cytherea's dove
Will please your palate, and your wit improve;
Use capons freely, partridges the same,
And that sweet bird, which we from Phasis* name.
Nor veal, nor lamb, nor chickens, I forbid,
Nor till his horns are grown, the sucking kid.
To quench your thirst, mix water with your wine.
'Tis good that both their friendly aid combine;
But let the wine be still diluted well,
Lest you increase what thus you wish to expel;
And oft may sallads, herbs, and ripen'd fruits,
As grateful prove as each your palate suits.†"

Moreover, let ablution and the occasional use of the cold shower, or other bath, at least in warm weather, be brought into a custom. Moderately exercise the arms and upper parts, by light dumb bells, the Indian sceptre exercise, and by rubbing. Avoid the daily use of hot relaxing liquids in excess, no matter how innocent these may be deemed by the many, whether in the form of tea or coffee. Let them be used sparingly, and let more nutritive

* Pheasants, so called from Phasis, a river of Colchis, where they were first discovered, and hence are called Aves Phasianæ, by Pliny.

† Pædotrophia, or the Art of Nursing and Rearing Children, a poem in three books, translated from the Latin of Scevole de St. Marthe, by H. W. Tytler, M.D., London, 1797.

articles be added to the breakfast and third meal. The meals, if substantial, ought not to exceed three. If suppers, for fashion's sake, must be taken, let them be composed of light, but nutritious food, and of this small quantities only should be eaten. Never indulge in coloured fish, whether in the form of shell or otherwise, as prawns, shrimps, lobsters, crabs, salmon, &c. Fresh soles, turbot, whiting, mackerel, or cod, may be advantageously interposed between more solid food, or constitute with vegetables the middle meal. Delight not in overmuch clothing. Above all, beware of the seductive fascinations of a small waist, nor essay to restrain within unnatural limits its necessary increasing augmentation.

> "And chief remember not to gird too tight
> Your swelling waist, though pleasing to the sight,
> Nor, for a shape, within the straighten'd womb,
> Like Gallic mothers, the poor child entomb:
> Else of the fatal deed, you'll soon repent,
> And for your infant's death, too late lament.
> Hurt not yourself, lest you should hurt your child,
> And thus, e'en should it live, its health be spoiled."

Carriage exercise, or, in the earlier months, gentle horse exercise for the younger, is very beneficial, and those who have been accustomed from their infancy to this luxury, often lose their health after this single privation. Trust not to garden exercise as a substitute for walking abroad. The English gardens, at least eleven months out of the twelve, are a fruitful source of colds and rheumatic complaints to those who loiter there too long.

It may be said, and I am not ignorant that such

is often the objection made to any recommendation of habits of activity, during pregnancy, that females, so situated, are more easily exhausted by any unusual exertion. Facility of exhaustion arises chiefly from languid digestion. Those who cultivate a vigorous condition in this important process, have little to fear from exhaustion.

Before I conclude this chapter, it may be as well that I should allude, though incidentally, to the pernicious effects of blood-letting during gestation (pregnancy,) too often practised, especially amongst the lower orders, whose only reason for desiring its employment is, "that they are pregnant." It is a most dangerous error, and, in some cases, causes irreparable mischief. In the plethoric and those labouring under any sudden or serious ailment, the judicious employment of the lancet may not only be desirable, but absolutely indispensable; yet even here, the cautious practitioner will not forget that a tendency to abortion, or miscarriage, may be induced by its operation; and he should thoroughly satisfy himself of the positive necessity for the detraction of blood, ere he assays to abstract it.

Having thus premised my observations on the pregnant state, I shall now proceed to that in which the child may be said to assume an independent existence; and first of the period of lactation.

CHAPTER VIII.

ON THE PERIOD OF LACTATION.—LONG CONFINEMENTS INJURIOUS—PRECAUTIONS AGAINST THE ADMINISTRATION OF SEDATIVE MEDICINES—DRESS—THE MOTHER, IN MOST INSTANCES, THE ONLY PROPER NURSE FOR HER CHILD—PROLONGED LACTATION—DRY NURSING.

THERE are works enough on the management of children at the breast, and on weaning. It is my purpose to speak only on the means of bringing children up hardily, so as to obviate the serous condition which causes Hydrocephalus. If I am able to form a correct opinion, the foundation for a good constitution has already been laid down in the previous pages. After the birth, the mother should return as soon as possible to her simple but nutritious diet. Long confinements, especially in hot weather, are injurious both to mother and child. When the measure is practicable, bed rooms with folding doors should be used, and each being alternately ventilated and aired, the mother and her charge should pass from one to the other; this being the first and safest step for insuring to both the invigorating effects of the purest atmosphere that can be obtained in a large town. A slop diet, and the recumbent position within the bed,

are, perhaps, too long protracted by our country-women. The free access of pure air will soon excite a keen appetite for food; and although mothers should and ought to recline oftener, and for a longer period, and even for several hours a day, on a sofa or outside of a bed, yet I would not recommend them to keep to bed a day longer than expedient, on account of its relaxing effects. Within a few days, say six or eight, unless threatening symptoms forbid, the invalid or slop diet should be discontinued, and simple, nutritious, non-stimulating food should be allowed. The inquiry for delicacies, or the studied supply of some article of food supposed, on superstitious authority, to be unusually easy of digestion, or contributory to the milk, is altogether superfluous, and often dangerous. A stale whiting has been known to be the cause of death, within thirty hours, by inducing cholera morbus; whereas, had the nurse been less exclusive in her selection of the early food, any simple article might have sufficed.

The child should be early inured to immersion, first in tepid and afterwards in cold water; and since it cannot as yet exercise itself, frictions after washing, and moderate tossing, are necessary for its invigoration. A little castor oil or magnesia may now and then be requisite to open the bowels, or a little dill or aniseed water to remove flatulency; but beyond these, if possible, no sort of domestic medicine ought to be administered. Above all, if the parent really love her offspring, she will avoid

narcotics, as among the most dangerous enemies and fatal destroyers of infantile existence; and she will strenuously resist the seductive persuasion of her nurse, who, careless and indifferent to the future weal of her charge, will not scruple for the sake of saving herself a little extra trouble, to administer her cordials, her Godfrey's, her Dalby's, her soothing syrup, her syrup of poppies, aye, and even laudanum itself. Let no argument or entreaty induce the mother to consent to an ignorant and self-conceited woman's recommendation, (and too many of such busy-bodies are always to be found in every sick room,) to lull her infant to sleep by soporific drugs; rather spurn the treacherous adviser from the house, and never sanction the exhibition of any quack nostrum, however lauded, but, when needful, seek the assistance of a professional man.

The infant ought to sleep with the mother, or in a cot along side her bed. Many say, "This is making matrimony a punishment;" others, "My father never tolerated this habit, neither will I." Those who wish to establish a good constitution in their children, will be amply repaid as they grow up, and as amply will they be punished if they delegate their maternal duties to servants. The increased susceptibility, the powers of observation, the vigilance that can hardly be deceived, are given by nature to the mother to little purpose, if her child is to sleep with strangers.

The higher the vitality of the parent, for the

most part the higher that of the child, and both will bear an exact proportion to the energy of the nutritive system.

Children should be made able to endure exposure to the cold. As Locke said, "Their surface, if possible, should be made all face, for our bodies will endure anything that they are accustomed to from the beginning;" and this equally applies to excessive heat and cold. It is a rule, as early as medicine itself, that in order to harden the head, the child should discontinue caps by night, so soon as he can play about without one by day. I think that children should be accustomed to wash their feet daily in cold water. I am sure that half, if not all chilblains arise from a low circulation and languid vitality, together with confined and acrid secretions from those parts. In summer time, those who can have the convenience, should provide movable tub-baths, let into their grass plots, in which children should be encouraged to disport themselves, and, in hot weather, to run about very lightly clad, or, if you like it, all but naked, on the well-trimmed carpet grass. When older, they should be taught to swim,—girls* as well as boys. "Nec literas didicit nec natare," was a phrase used in contempt, by the Romans, to

* Every large town should be well provided by the corporate authorities with large swimming baths; and with competent persons of both sexes to teach boys and girls the art of swimming. In after life the possession of this faculty would be found by females to be of far greater importance than many of the accomplishments so lavishly bestowed upon them.

designate those whom they believed unable to read or to swim, and they considered the latter accomplishment of equal importance with the knowledge of letters. The Athenians were compelled, by the laws of Solon, to teach every citizen to swim, as well as to read. An admirable rule, which might beneficially be made imperative on both sexes throughout the British realms. It would not only be advantageous to the preservation of life in emergencies, but also productive of health and corporeal vigour. It required not the handbook of hydropathy to convince the physician of the importance of this great means of invigoration. "Every one," writes Locke, "is now full of the miracles done by cold baths, on decayed and weak constitutions, for the recovery of health and strength." Hydropathy is at least as old as Saint Winifred's well; and although the saint in these Protestant times may be out of repute, the well is as invigorating as ever. The great secret in the use of cold ablution, sponging, or immersion for invalids, is to discover the non-existence of organic disease in a vital part, and also to ascertain that the energies are not too far exhausted to admit of reaction. Its practicability and tolerance for improving and hardening children whose springs of vitality are less likely to fail, and who are therefore under better circumstances for its use, need not be feared, unless where disease is already present.

But, lest the reader should imagine from the

foregoing remarks, that I am in the slightest degree tainted with the hydropathic mania, or an advocate of the cold water *cure*, as pursued and practised in the modern institutions, I take this opportunity of distinctly avowing, that the present system, in my opinion, is one of the veriest fallacies of the nineteenth century. Liebig, who styles these establishments, "Dens of covetous and rapacious gamblers, where the wretched invalid resorts to throw the dice for life and health,"* has not, in this cutting caustic paragraph, overshot the mark.

Confinement in the house, except from an unfavourable appearance of the atmosphere, or during the prevalence of a dry North East wind, should be studiously avoided; and nurse girls, or those having the charge of infants, cannot be too much cautioned against the practice of standing still with children in their arms. Many a severe inflammation has been inflicted on the little innocents, from the wanton and culpable thoughtlessness of nurses in this respect. The rule is simple, as regards both the child and its nurse, when in the open air—"*keep moving.*"

The next subject is that of clothing. As a matter of taste and elegance, I am willing to admit that such costumes as most accurately preserve the outlines of the human body, will ever be the most classical; but with children, "Nature should have scope to fashion the body as she thinks best."

* Observations on Organic Chemistry, and its Relation to Physiology, by Justus Liebig, M.D., *Lancet*, vol. I., 1844.

Children should have their suits of play clothes, in which, without restraint or fear of punishment, they may be totally free from care and anxiety, either on the point of damaging, or tearing, or soiling, so that they may be as free as the winds of heaven.

It may be expected that I should give an opinion as to whether a mother ought, under certain circumstances, to be released from supplying her own milk to her child. That the mother's milk is the only proper nourishment for infants, has been asserted from Pliny's time, downwards, without duly considering whether, if the mother be unhealthy, some more eligible substitute may not be even preferable. That

"No mother should from nursing be released,"

has been the opinion of many; and we read of a Queen of France, who, according to Van Swieten, was so much displeased because, during her own temporary illness, another matron had given her breast to the thirsty and crying child, that she thrust her finger into the child's throat, to excite vomiting. Our Queen, as it appears to me, so far acts more judiciously, under good advisers; for she ensures to her royal offspring a milk much more highly vitalized than any she could herself supply, considering that her high cultivation of mind and her regal cares must have, in a degree, rendered her delicate, in comparison with her more rustic subjects.

Supposing, however, that the mother is of ordinary

vigour and health, as a general rule nothing can be more natural or beneficial for a child than that it should be nourished by the milk of its mother. "In the womb," says Van Swieten, "it had its nourishment and growth from the mother's humours; nay, it seems very probable that, in the last months of pregnancy, the milk was carried to the uterus and to the fœtus. If in grown men and men in health a sudden change in the manner of living be not without danger, it is evident that there is great reason to fear lest a new-born child, by an improper nourishment, should decline in health. But as breasts were given not only to women but to four-footed animals, and so much the greater number as they are used to bear a greater number of young, that all may have their food ready as soon as they are born, it appears evident, that new-born babes should be nourished by the milk of their mothers, until, their bodily strength increasing, and their teeth being grown, they are able to take more substantial food, such as may require a greater effort of digestion, and convert it to their own use."* But mothers should recollect that not only the material thus supplied for digestion, but the degree of vitality itself, mainly depends upon the state of their own health, and that the increase of the bodily strength of the infant mainly depends upon their keeping in a sound condition their own frames.

* Commentaries upon Boerhaave's Aphorisms, by Baron Van Swieten, M.D., Vol. XIV. Edinburgh, 1776.

This healthy condition of body may almost always be obtained by attention to exercise, to diet, to clothing, and by avoiding overstimulation, whether arising from heated rooms, exciting company, or high feeding. It is a mistaken notion, and one in which many nurses indulge, that in order to supply a rich nutritious aliment to their offspring, malt liquors, wines, &c., are indispensably requisite during lactation. Many a highly respectable lady has become a confirmed drunkard, and sunk into the lowest paths of self-degradation, from the repeated solicitations of her too importunate, kind, but misguided friends, to take a little of something warm, before going to bed, or a glass or two of wine extra whilst suckling, which, with such advisers, is a never-failing specific for the low faint feel experienced by some nurses, or for the deficient supply of milk in others. I do not deny that the occasional or daily use of a pint of ale or porter, to a weakly or enfeebled nurse, may prove of essential service, for I have seen abundant proofs of its good effects; all that I wish to convey is, that in health the use of strong drinks* is of questionable utility, if it be not highly pernicious. "Drink not wine nor strong drink," was the injunction given by the angel of the Lord to Manoah, the mother of Sampson, that the fruit of her womb might so excel

* By strong drinks, I mean the various kinds of spirits, wines, ale, and porter, to be met with at the dealers', as contradistinguished from home-brewed beer, which, taken in moderation, I believe will injure no one, and often proves extremely beneficial, especially to persons of a lax habit of body.

in muscular strength and prowess, as to accomplish the liberation of the Israelites from their Philistine bondage.

It is with pain I record that I have too often witnessed the fact, that when child-bearing women have yielded to the temptation of taking intoxicating liquids, till brought into a habit,* they acquire a tendency to premature birth, or lose their offspring in convulsions within the first year; and even if the latter survive the period of teething, it is rarely passed without the supervention of some severe cerebral, thoracic, or abdominal affection, not infrequently gradating into water brain fever. Children born of intemperate mothers, require all the skill and attention that medical science can furnish; and indeed so great is the amount of care demanded and obtained by the parents from the medical man, that to use a popular phrase, "the doctor is never out of the house."

If every mother, during the period of lactation, spent a considerable portion of her time in outdoor exercise, she would have no occasion for stimulants to provoke an appetite, or feel the want of them, to increase the flow of milk. Her improved digestion, from the stimulus imparted by fresh air, would quickly provide an ample stock of material, from whence, without intrenching on her supply, a rich and nutritious beverage, abounding in vitality, would be produced, capable of imparting fresh ones

* Habitual ebriation in the female, is one of the most frequent causes of sterility.

of life and energy, to her dependent charge. Nor is the parent the only party who suffers from inattention to Nature's precepts, for "Nature is governed by the finger of God." Outdoor exercise, whilst improving the health of the mother, exerts also a beneficial influence on the child, and the avoidance of inebriating stimulants, with proper regard to personal cleanliness, is one of the best means of ensuring to her infant a safe issue through the perils attendant on dentition.

It is from what are supposed trifling irregularities, continued and repeated on the part of the mother, that the numerous serious ailments which befall children at this period of their existence, principally accrue, and which either terminate fatally, or lay the foundation of other visceral and serious diseases, such as Hydrocephalus, Mesenteric disease, affections of the liver or kidneys, consumption, pneumonia, &c. The process of teething is a natural process, and, if not injudiciously interfered with, or the system debilitated by improper and unsuitable food, would rarely be attended with danger. It is therefore amongst the highly pampered in the dwellings of the rich, or the half starved in the cottages of the poor, that the greatest havoc is made in infantile life; and this fearful mortality in a great measure depends on causes easily removed, and which, as I have before shown, are often traceable to the parents themselves.

It is not here my intention to speak of the mode in which the primary teeth first develop themselves,

for that will be treated of in another section. In alluding to the subject of dentition, my observations have been chiefly directed to it as furnishing a valuable index to the time at which more solid food may safely be permitted, and the child gradually brought to feed on other nourishment than that furnished by the mother. As soon as the incisor, or front teeth, have fairly passed through the gums, the mother ought seriously to prepare her infant for a change in its food. Nature, there is no doubt, intended these little instruments for active operation, as soon as they appeared, as may be deduced from the manner of their protrusion, which, as a general rule, occurs in the lower jaw first, so that they can be brought into immediate requisition; which would not be the case if they appeared first in the upper jaw.

From what I have stated, it is evident that any rule founded on the age alone, at which a child should be removed from the breast, must admit of numerous and important exceptions. Generally speaking, it will fall betwixt the ninth and fourteenth months, for at that epoch, most infants, unless naturally of a very weakly constitution, will have so far advanced the elimination of their teeth, as to be capable of digesting and assimilating more solid aliment. I fully agree with Sir James Clark, that the children of scrofulous or consumptive parents ought to continue to take the breast for a longer period, say eighteen months, or two years. And no such parent should neglect the additional

recommendation to provide a *healthy wet nurse*, to take charge of the nursling; as the parent's milk, independent of the mischief which long continued suckling would entail on her, is already too impoverished, and would only increase, not diminish, the strumous tendency. In India, where prolonged lactation is carried to its greatest extent, the parents being mostly of a lax habit of body, we find, as a result, that scrofula predominates largely amongst the offspring of the Hindoos; whilst many of the wandering tribes both of Asia and Africa, and the aborigines inhabiting the islands in the South Pacific Ocean, give the breast to their children for two or three years,* without, as far as I can learn, inducing the strumous diathesis. The ancient Hebrews suckled their children for the space of two years: and we read in the Koran that Mahomet, who entertained a high veneration for the customs and manners of the Jews, recommends his followers to adopt a similar plan.

It may, however, be stated, that prolonged lactation cannot fail to be injurious both to the mother and her nursling, if the former lead a sedentary or inactive life, and confine herself too much to the house. Those females, on the contrary, who are

* The following amusing instance of protracted lactation I copy from Mr. Backhouse's narrative of his visit to the Australian Colonies. "On visiting some of the natives at their fire, I saw the little black boy (four years old) before noticed, after filling his pipe and smoking with the rest of his country people, lay it down, and kneel in his mother's lap and suck. This," says Mr. B., "was a combination of circumstances such as I had never imagined."

constantly exposed to the elements, and continually engaged in outdoor exercise, will rarely be damaged by nursing their children for eighteen or twenty months. But if the child be healthy, and born of healthy parents, no advantage is derived by the child from increasing the period of lactation beyond the first year.

It may be remarked as an excuse for protracted lactation, that many of the lower classes, and indeed some of the middle ranks, prolong this period from a weak though uncertain motive,—*the dread of a large family*; and although it may sometimes appear to succeed, by far the greater number live to witness the fallacy and future ill consequences of these Malthusian experiments.

Another rule may be given, founded on extensive experience. Children whose cranial bones are not yet closed, having, as the phrase is, open fontanelles, should never be weaned so long as a wet nurse can be procured, for within the first two or three days after being deprived of the breast, they are often carried off by convulsions.

In the foregoing observations I have premised that the parent, in all cases when practicable, should nurse her own offspring, and not delegate her responsibility to others. "A woman ought to be the entire mother of her child; how contrary to nature is this imperfect sort of mother, this mother by halves, who brings forth, and then casts of her offspring! —who, after having nourished in her womb, and with her blood, something which she did not see, does not

now nourish with her milk, what she sees living, become a human creature, and imploring the assistance of its mother. Do you imagine that nature gave women breasts, like a sort of beautiful excrescences to adorn their chest, and not to nourish children?"

It may be asked of me in the event of death, indisposition, or other obstacle to the performance of this duty, what substitute I would recommend for the mother's milk, where a wet nurse cannot be had. My reply shall be brief; few, very few, children of naturally robust constitutions, thrive from artificial nursing, and to bring up children by the hand, who are delicate or prematurely born, is generally to seal their doom. Such children may survive a few tedious years, dragging on a miserable existence, but rarely, if ever, possess vital energy sufficient to enable them to bear up against the multifarious disorders of infancy, which are continually besetting them.

The diet of children brought up by the hand, ought to assimilate, as near as possible, to the milk secreted by the healthy maternal breast.

Ass's or goat's milk, if procurable, diluted with water, and sweetened with sugar, is decidedly the best food for such infants; or where these are not to be had, equal parts of cow's milk and pure distilled or boiled water, or in some cases for the delicate, with lime water, may be substituted. No child ought to be allowed to take the breast whenever it pleases, or as often as it pleases, or as much as it pleases; and when nourished on artificial diet,

it is of still more importance that stated intervals be observed, to prevent any undue oppression of the stomach. The quantity of food demands our consideration. Three or four ounces, in other words, six or eight table-spoonfuls of any of the above fluids, are amply sufficient for a meal, given at a temperature as near as possible to that which would have been supplied from the mother's breast, viz., about 98°. All food should be administered through a clean glass sucking-bottle, having a cow's teat or piece of fine muslin attached to the mouth; and it should be given slowly and cautiously.

Unless the bowels be disordered, or the child much reduced, this diet ought to be rigorously persevered in, with a slight increase in the quantity of milk. Chicken broth or beef tea should never be permitted (except under medical direction) until after the first incisor teeth have protruded, when the child may then partake of such articles of diet as are suitable to children of similar constitution reared from the breast.

CHAPTER IX.

ON THE APPEARANCE OF THE DECIDUOUS OR MILK TEETH, AND ON THE PERMANENT TEETH.

Easy dentition chiefly depends on the condition of the child's system. Those children who are supplied exclusively with nourishment from the maternal fountain for the first seven or eight months of their existence, and who are freely exposed to the morning breezes, rarely ever experience much inconvenience from this process, and especially so, if in addition the mother has had the common sense properly to regulate her own conduct during pregnancy, and to pursue the same judicious plan throughout lactation. Children thus nourished and educated avoid alike those serious abdominal, thoracic, and head affections, into which difficult dentition is apt to gradate, and are more likely to avoid its not infrequent and dangerous attendant, water brain fever, the growing result of impaired vitality in the breed. The age at which children begin to cut their primary teeth has a distinct reference to the retarded or advanced growth of the constitution. A child, well nursed and vigorous, usually evinces symptoms of the

commencement of dentition about the fifth or sixth month, sometimes earlier; on the other hand, one who has been fed on mixed diet, and has had a liberal allowance of tops and bottoms, oatmeal gruel, panada, &c., may have this process delayed until he shall have attained the age of twelve, fourteen, or twenty months: "For the force of the constitution is very well declared by the periods at which the teeth may be made to protrude through the gums;"* and if a child, at four or five months, cuts his teeth, it may generally be inferred that his digestive powers are as great as one in whom the first appearance of the teeth is not indicated until the eighth or tenth month.

Amongst the savage tribes, the first formation of the teeth is rarely attended with any manifest uneasiness. In civilized life, man too often entails on his offspring an increase of the infirmities to which, in early life, he was subject. "The same diet, the same fashion of dress, and the same local atmosphere, are usually continued through several generations; and in this way all hereditary aptitudes for disease are propagated, and often aggravated. Even in cases of the gout, young master heir-apparent is called in after dinner to take half a glass of wine to strengthen him, and before he quits college he may have attained to the high perfection of withstanding two bottles. Thus, if he staggers on as far as middle age, he is then said to inherit the gout."

* On the Physical and Medical Treatment of Children, by W. R. Dewees, M.D., 1826.

The effect of civilization has been, in some measure, to retard, instead of promoting, the natural process of toothmaking; or else to beset it with such difficulties as materially to injure the fabric when completed. It is true that the present age, so fertile in invention, has succeeded in manufacturing artificial teeth so beautiful in appearance, that they may be said to rival, if not to excel, the natural ones in every thing except for the purpose of mastication; and here nature maintains her wonted superiority.

In the times of falconry, the mewer was severely punished if, by irregular feeding or improper food during the season of moulting, he allowed the quill feathers of the hawks to become knotty or crooked, so as to interfere with the celerity of their flight.

An analogous circumstance also takes place in the renovation of the tissues in the human body, during a disordered state of the stomach; as may be witnessed in the altered appearance of the hair or nails, or in the cicatrization of a wound, when completed under an oppressed condition of the digestive organs.

When the first set, or milk teeth, develope themselves in a child well nourished with the milk of the mother, they merely occasion a slight temporary uneasiness in the mouth, manifested at first by an augmented flow of the saliva, and a desire on the part of the child to convey every thing he can lay hold of to his mouth. After the lapse of a little time, this is followed by tension and swelling of the

gums, when the child usually becomes fretful and uneasy, and is very variable in his spirits. At one time the tears will be seen coursing down his cheeks, while the next moment a smile may be seen playing on his features.

In these cases the constitution does not appear to suffer very much from the irritation, or to evince any very unusual disturbance, if we except the diarrhœa which not infrequently accompanies the "breeding of the teeth," as it is popularly termed.

The deciduous or milk teeth consist of twenty in number, ten in each jaw, viz., eight incisors, or front teeth; four canine, or eye teeth; and eight molares, or grinders.

About the sixth or seventh month,—sometimes earlier, sometimes later, according to the constitution of the child,—the incisors or front teeth, (known also by the name of smiling teeth, as being most conspicuous in that action,) of the lower jaw, protrude, and in a short time, but generally within two or three months, the two antagonists in the upper jaw ensue. These are mostly followed by the two lateral incisors in the same jaw, to be succeeded in a short time by the two in the inferior jaw, for it is seldom that these present themselves before the ones in the upper jaw. A more lengthened interval of repose now occurs. The eye teeth or two first grinders, usually of the lower jaw, advance next in order, to be succeeded by the corresponding ones in the upper jaw. The remainder of the temporary or milk teeth are mostly eliminated before the completion of the thirtieth month.

Should, however, the child have been improperly nourished and nursed, a circumstance which unfortunately too frequently occurs, then the milk teeth, instead of being formed of healthy material, capable of resisting attrition for the allotted period of five or six years, are usually elaborated deficient in enamel. For what betwixt the conflict of crudities of the stomach, and calomel, carminatives, and antacids, these temporary masticators are deprived of their due proportion of earthy matter, from the low vitalized condition of the blood, and shortly after their full evolution from the gums they begin to perish, or else occasion so much uneasiness, that they are obliged to be removed long before the time of second dentition. The mischief does not always rest here, for the irritation of the gums sometimes becomes very intense, inducing fever, attended with restlessness, loss of sleep, constipation; these symptoms are often followed by other alarming signs, which not infrequently terminate in convulsions, rickets, consumption, Hydrocephalus, &c. It is, therefore, of the highest importance to the interest of the child, that every thing which is likely to render this process dangerous or protracted, should be carefully avoided. Free and repeated scarification of the gums should never be neglected, whenever a child evinces unusual restlessness during the period of teething; and this, conjoined with an open state of the bowels, will greatly tend to lessen many of the miseries consequent on difficult dentition.

It must ever be borne in mind whilst treating on

the subject of dentition, that it is between the completion of the first and the appearance of the second set of teeth, that Hydrocephalus is most frequent and dangerous. Though this disease may occur previously to or after this epoch, the majority of cases have been found to arise betwixt the fourth and eighth year of life, and in many of these, inquiry into the previous history of the patients will commonly establish the fact, that primary dentition has been attended with more than ordinary severity.

The second or permanent teeth usually commence to develop themselves about the seventh year. They consist of thirty-two, sixteen in each jaw. Of these twenty-four only make their appearance before the twelfth or fourteenth year, when four more are added, to be succeeded by the remaining four or teeth of wisdom, which follow at indeterminate periods from the eighteenth to the thirtieth year.

It is after the shedding of the first teeth that the good sense of the parent ought to prompt her to pay especial attention to the preservation of her child's teeth from decay. For this purpose she ought to see that they are regularly cleaned, night and morning, by brushing them with soap and water or some harmless dentifrice, and also by removing every portion of the food which may have become inserted between them during mastication. The discreet mother, in a subject of so much importance as the one under consideration, affecting the future comfort and health of her child, will not trust to her nurse girl to carry out this wholesome and judicious recom-

mendation, but consider it as one of those indispensable duties which can only be properly performed in her presence or by herself. This may entail a little temporary inconvenience, but the blooming looks, the healthy aspect, the vigorous digestive powers, and the sweet uncontaminated odour of the breath of her offspring, will hereafter prove a sufficient recompense for all the toil and labour she may have previously bestowed.

CHAPTER X.

ABLACTATION, OR WEANING.

To proceed with that part of the first septennial period, when the primary teeth have been so far developed that the infant may be said to have partially established his relation and connection with surrounding agents.

When it shall have been determined to wean the child, care should be taken that the transition be not made too suddenly, so that neither the mother nor her child may receive injury from the change. The preparatory process of weaning should commence about the seventh or eighth month of the child's existence; in other words, it should be begun so soon as the condition of the child's system, evidenced by the protrusion of the incisor teeth, shall indicate the digestive powers to be sufficiently advanced as to be capable of assimilating more solid food.

A prudent mother will have so arranged, that the previous habits of the child shall render this process comparatively easy, and unattended with danger or more than temporary inconvenience.

From the period the child was first ushered into the world, it will have been her endeavour to regulate,

as much as possible, the hours when nourishment should be supplied to her nursling. For this purpose she will studiously avoid applying her infant to the breast at other times than those which nature requires. Every four hours, or six times a day, will be found amply sufficient to supply the maternal food. After the mother has partaken of her breakfast, or about nine o'clock, (the child having been previously washed and dressed, which operations usually render the appetite keen and vigorous,) will be the most suitable time to commence supplying the child with its first daily food. As a general rule, it is decidedly preferable, both for the nurse and her charge, that the latter should be fed after—not before—she has finished her own meals. Thus she will be less exhausted by suckling, and a more plentiful provision, as well as a more nutritious beverage, will flow from her breasts. The time for the evening or fourth meal will, according to this arrangement, fall at the same hour, or nine o'clock at night. If the parent retire early to rest, or shortly after this period, she may, with one single exception, pass the night in uninterrupted repose; whereby she will be enabled comfortably and without fatigue to attend to her domestic duties during the ensuing day, and both she and her offspring will derive all the advantages which necessarily accrue from refreshing and undisturbed sleep.

The first step in the process of weaning, should be to make such slight alterations in the diet of the infant as shall gradually and imperceptibly accustom it to other food than that furnished by the mother.

For the first two or three weeks it is best to give only one meal of artificial food during the day, cautiously increasing the number as they are found to produce no disturbance, but rather improvement, in the child. The change in the infant's diet should commence with the morning meal. Milk, sweetened with sugar, to which a little oatmeal has been added, may very properly constitute the first alteration to be made in the child's diet; after which bread, previously steeped in water, may be substituted for the oatmeal and sugar. Tops and bottoms, grated into milk, and passed through a muslin sieve, rice milk, sago milk, and mealy potatoes, may occasionally be interposed every third or fourth day, until the functions of the stomach shall have become sufficiently vigorous to allow of these articles being taken every day. By this method, the child may be unconsciously, as it were, withdrawn from the breast during the day; and when it shall be deemed prudent to withhold the maternal nourishment altogether, the loss of one meal at night will be found so trivial, and occasion so little disturbance, as to render ablactation both easy and unattended with danger.

The usual demand for the mother's milk having been gradually lessened, she escapes many of those annoyances which so frequently occur when this secretion is too suddenly suppressed.

If weaning be attempted too abruptly, an irritable condition of the child's system may result from the disordered state of the digestive powers, which is not unlikely to terminate in Hydrocephalus or con-

vulsions, or to lay the foundation for a serous condition of body, which especially favours the development of these and other serious disorders.

The diet of the newly weaned child should claim our special attention. All heating or stimulating food must be strictly forbidden. Weak beef tea, chicken broth, puddings made of bread, rice, sago, or tapioca, mealy potatoes, rice milk, Canna starch, *(Tous-les Mois)*, milk or arrow gruel, will be found to afford variety sufficient on which to rear the infant, without cloying his stomach with other more tasty dishes, until the whole of the primary teeth shall have protruded through the gums.

In the above recommendations, it must not be understood, that I conceive a rigid compliance with them in every case, is absolutely necessary to ensure to the parent and her child that vigorous and healthy condition of the system which it is my desire and aim that they should attain. It must ever be borne in mind, that no exclusive system, or any preconceived notions of diet, or times for feeding, can possibly be laid down to suit the various constitutions and diverse peculiarities of the human race. My object will be accomplished, if in the aggregate my views shall be found to correspond most closely with the requirements of the greatest number, and with the general laws which regulate human life.

CHAPTER XI.

ON DIET.

The gradually increasing complexity of diet is another cause of diminution of vigour amongst us. Almost all children among the higher and middling, and not a few among the lower classes, have had more experience *au gourmet* before they have passed their first septenary, than half of our ancestors had in their last.

Too much stress cannot be laid upon the danger and deleterious consequences of over-feeding infants who have recently been deprived of the breast. With the following judicious recommendations, I in a great measure concur:—"A healthy child, of two or three years old, commonly awakes hungry and thirsty at five or six o'clock in the morning, sometimes even earlier. Immediately after awaking, a little bread and sweet milk should be given to it, or (when the child is too young to eat bread) a little bread pap. The latter should be warm; but in the former case, the bread may be eaten from the hand, and the milk allowed to be drunk cold, as it is as well at this meal to furnish no inducement for eating beyond that of hunger. After eating, the child will generally sleep

again for an hour or two; and about nine o'clock, it should get its second meal of bread softened in hot water, which latter is to be drained off, and fresh milk, and a little sugar, added to the bread. Between one* and two o'clock, the child may have dinner, consisting at the younger ages of beef, mutton, or chicken broth, (deprived of all fat) and bread. When a sufficient number of teeth are developed to admit of chewing being performed, a little animal food, as chicken, roasted or boiled mutton or beef, not too much dressed, should be allowed, with a potato or bread, and some fresh, well-dressed vegetables, as turnips or cauliflower. After dinner, some drink will be requisite; and a healthy child requires, or indeed wishes for, nothing but water. Light, fresh table beer, would not be injurious to a child of four or five years old; but it is unnecessary, and no advantage would, in this instance, result from the creation of a new want. Between six and seven o'clock, the child may have its last meal of bread steeped in water, &c., as at nine o'clock in the morning. A healthy child, who has been in the open air during the greater part of the day, will be ready for bed shortly after this last mentioned supply, and will require nothing more until morning. Similar regimen and hours may be adopted throughout the whole period of childhood; only, as the fourth or fifth year approaches, giving for breakfast and supper, bread

* One o'clock, in my opinion, is better. Five hours are rather too long for a young child to fast.

and milk without water, and either warm or cold, according to the weather or the child's inclination. The supply of food on first waking in the morning may also be gradually discontinued, and breakfast given somewhat earlier."*

"Except when the weather is foul and inclement, I would have children well exercised and exposed to the air, either in their nursery, with the upper windows lowered, or out of doors, so that they may be sharp set, and come to their food with a keen appetite, and not merely out of custom. One often sees girls sitting down at the breakfast table immediately they descend from their bed rooms, languid, pale, listless, and deficient in energy of mind and body. They bite two or three bits of toast, and are scarcely awake until they have sipped down sundry cups of tea or coffee. They are not hungry. A sinking and debility they indeed have, but not an appetite. Not that I would have children crammed at breakfast with a large quantity of flesh meat, but yet I would have their first morning meal to be tolerably nutritious. A piece of coarse bread, and a basin of milk, milk porridge, Scotch porridge, or flummery, constitute a very good breakfast. Cocoa *au lait*, coffee *au lait*, or milk tea, *occasionally*, in the second septenary, adding now and then to the meal, a thin slice of cold meat, an egg, boiled fish, fruit, ripe or potted, &c. In summer I would sometimes substitute a piece of brown bread and cheese,

* A Practical Treatise on the Management of Children, by R. T. Evanson, M.D., and H. Maunsell, M.D. Dublin, 1838.

or butter, with radishes, onions, cresses, &c., and a cup of good small beer* or treacle beer for the boys, and the same for supper. Such a diet appears to me suitable to children of any estate and of any condition; for, peaceful as our times are, every good citizen ought to be brought up, if possible, as an able-bodied man, fitted to bear arms, and, if necessary, to be a soldier."

Coffee and tea, and such like refreshing hot beverages, may be useful, taken occasionally; but to make such liquids the staple article of our drink, and to indulge in their use twice or oftener a day, is remotely injurious to offspring, and is contributory to that physical deterioration of the breed which is daily leading to Hydrocephalus. I believe that a stomach to crave, with habits to insure a craving for good bread and beer, is one of the essentials to produce a fine race of British lads and girls, and the genteel refinement of habits of eating and drinking, is introducing a race, half begotten, half nourished, half vital, short-lived, prone to Hydrocephalus, prone to all nervous diseases, to insanity, and consumption. That you may have a fine race of men in any cold climate, living on water alone for drink, provided they get good nourishing flesh meat, I doubt not; but that you shall long continue to have, in such a climate, a vigorous race living on hot excitant slops, and excluding the rougher elements of heaven, lest they should create an un-

* Never give brewhouse beer to children. No one knows but the brewer what deleterious ingredients are infused in it.

genteel appetite, is what I should not believe. The great disadvantage of meats deficient in nutrient quality, is the necessity of frequent repetition. Now, vigour is best promoted by meals few, hearty, and nutritious. Really in many families we may observe a constant succession of meals—eating and drinking all day long. Two substantial meals a day ought to suffice adult men, and no young person should have more than three. Their dinner should be plain roast or boiled meat, with plain vegetables, and a lump of coarse bread. Small beer, domestic lemonade, or water, constitute very good drinks. The first for children taking more exercise; the second occasionally when they have scorbutic eruptions; and the third at any time. Now, although I advocate the use of good small beer, treacle beer, mild porter, &c., I am decidedly and strenuously opposed to the use of strong drinks, wine, cordials, liquors, and to every thing which stimulates beyond a wholesome refreshment; but when lads are under strong exercise in long strolls, rowing, cricketing, or skating, the allowance of a half-pint of porter per day, and, in hot weather, mixed with a bottle of good ginger beer, is very proper, unless they are to be brought up milk sops; and there is too much of that cast of constitution in our Hydrocephalic children from the birth. It is a good plan to inure children occasionally to hunger and to thirst. It gives a fresh impulse to their constitutions. It is only a continued deficit of material which impairs their health.

Of all the inconvenient ways of expense and refinement that modern vanity has invented, I know of none so humiliating and disgusting as the dessert. It is the fashion to send for children at this period of a meal to introduce them to company. The gourmands are soon located at the festive board. Visiters vie with parents and each other in teaching them the cultivation of their palates; and they are shamefully abused for the amusement of all, by being often encouraged to drink wine before they can speak. Even those who would be shocked at young master being allowed a refreshing draught of beer or porter, as above recommended, will not scruple to let him sip wine and gorge fruit under the patronage of complimentary and very kind, but thoughtless, guests.

The moderate use of fruit is not only not injurious but salutary, if allowed at proper seasons, and not by way of dessert after a full meal. As they come in season, a few strawberries or gooseberries thoroughly ripe, make a wholesome addition to the breakfast; and any of our garden fruits may be allowed before or with the dinner. The practice of giving children money to buy fruit at petty shops or in the street is bad, for much of such trash is immature, indigestible, or in a state of decay.

A vulgar notion prevails throughout this country, that autumnal fruits induce cholera and bowel complaints. No doubt such fruits, and particularly the acerb stone fruits, may occasionally act as an additional exciting cause; but every well educated medical

man must know that the prevalence of such maladies depends upon a peculiar condition of the atmosphere at this season, which makes its impress on the nervous system, and on the blood of those disposed to it. But after all, the allowance of fruit to children may be beneficial, innocent, or injurious, according as they themselves are more or less hardy; and there are children whose stomachs and bowels are by nature so weak, as to require more than ordinary caution in the use of relaxing vegetables of all kinds.

The use of sweetmeats, conserves, confectionery, crystallized fruits, and all such cloying and thirst-creating foods, should, however, never, or very rarely, be introduced in any family where there are children. One may be permitted to regret that the bons bons of our continental neighbours have become so common in our large towns. The rising generation will have to pay dear for the innovation; or, as it has been quaintly expressed, "It is like drawing bills in infancy, to be repaid with fearful interest at some future date." Far better was that wholesome simplicity of former times, when the English lad at a wake or fair had to make his choice between a cake or a roll. The rubbish sold as well by confectioners as by druggists under the names of lozenges, acid drops, jujubes, and the like, are all equally objectionable, and should not be allowed to young people.

I never see the counter of a chemist ornamented with such trash, without entertaining a shrewd suspicion that the consumers, under the idea that they

are employing efficacious and palatable remedies, are purchasing the means of impairing their digestive organs, destroying their appetites, and creating, in the end, a necessity for swallowing more disagreeable, but much more effective, remedies.

CHAPTER XII.

ON SLEEP.

The great importance of sound sleep in restoring and invigorating the constitution, cannot be overlooked. The earlier period of infantile existence is divided between sleep and the efforts to obtain an adequate supply of nutrition. By degrees, as the bodily faculties develop themselves, longer intervals intervene between the hours of repose; and at a period varying with the constitution of the child, but generally betwixt the second and third year, twelve hours may be said to be the daily average.

As sleep is as essential to the well-being and growth of the child as its daily food, every precaution should be taken to render it sound and refreshing. To determine the proper quantity suitable to each child, we must pay particular attention to its habits. Those children who are of an active disposition require more sleep than those of an opposite temperament. "Persons in whom the organic functions predominate, who are stout and full-blooded, sleep longer, and require more sleep; and the

contrary is the case with thin persons. Individuals of excitable, but, at the same time, energetic, constitutions, and who are with difficulty fatigued, require less; those of an excitable, but more readily exhausted habit of body, require more. In youth, sleep is longer, and is more indispensably requisite than in old age. This difference seems to depend on the greater predominance of the nutritive organic functions in youth. Hence the great length of time passed in sleep by the new-born infant. This disposition to sleep is constant in the child as long as the organising action finds material in new nutritive matter supplied by food; and the child awakes when it requires nourishment."*

To give some idea of the quantity of sleep requisite for the different periods of life, I have inserted the following table, compiled by Fried-Londez :—

TABLE IV.

Age.	Sleep Hours.	Exercise Hours.	Occupation Hours.	Rest Hours.
7	9 or 10	10	1	4
8	9	9	2	4
9	9	8	3	4
10	8 to 9	8	4	4
11	8	7	5	4
12	8	6	6	4
13	8	5	7	4
14	7	5	8	4
15	7	4	9	4

* Elements of Physiology, by J. Müller, M.D. Translated from the German by Dr. Baly, London, 1842.

There are, I fear, very few schoolmasters* in these stirring times of mental improvement, who will advocate the adoption of the above distribution of time. Too many are apt to encroach upon the hours which ought to be appropriated for exercise and rest, thereby augmenting the number of those to be devoted to occupation, with the manifest risk of injury of health. It has been justly observed by Sinibaldi, that "The first epoch of life to the age of seven ought to be entirely consecrated to the perfect development of the organization of children, and by the agency of physical education, to render them as healthy, robust, and strong as the nature of man will permit." Let it, however, be remembered that no exact approximation dependent on age, can be made. It is both inconsistent and unphilosophical to expect that either children or adults of similar ages, but of different temperaments and constitutions, can be made to bend to rule in this respect. Some individuals in their most active pursuits have been known to require comparatively little rest. Napoleon, it is reported, rarely slept more than three hours; and General Pichegru assured Sir Gilbert Blane, that in the course of one of his campaigns, he, for upwards of a year, rarely passed more than one hour in the four and twenty in sleep.

Sleep being one of the essentials to the preservation and promotion of health, regard must be had

* Nine to ten is quite soon enough to commence the scholastic education of youth. All instruction previous to this should be communicated in the way of amusement, and not in the form of set tasks.

to those circumstances which are most likely to encourage it, and to render it sound and refreshing. In the sleeping room, all noise or unusual sounds ought to be guarded against as much as possible, and children should early be accustomed to sleep in the dark; not only for certain physical reasons, but also for moral ones. Sleep appears more refreshing and continuous when it occurs in the absence of light; nor is the dread of being left alone in the dark so likely to arise in the minds of those children who have early imbibed the habit of passing the night without light. Besides, the effluvia from a burning candle is neither safe nor wholesome, unless the air of the apartment be constantly renovated. A candle in a state of incandescence consumes as much oxygen as would nearly suffice for the maintenance of respiration in an adult.

When of sufficient age, children should be taught to dress and undress in the dark. An eminent writer has remarked that "The end of life is innocent enjoyment, and sleep contributes to this as much by destroying the monotony of daily life, as by restoring the exhausted powers by which vitality is carried on."* All animated nature seeks this refreshing cordial. Aristotle long ago observed that "Sleep, in a greater or less degree, falls to the share of all animals." Nor is the vegetable creation exempt from its influence. Plants, like ourselves, have their hours of waking and sleeping. How beautiful

* Dr. A. P. W. Philip's Inquiry into the Laws of the Vital Functions.

this provision of nature! how strikingly illustrative of the wisdom, power, and prescience of the Deity! Had it not been so arranged, neither man nor cattle would have found it possible to dwell or herd together. Their very existence would have depended on their scattered, sequestered position. But by a wonderful contrivance of all provident nature, the air is purified by the vegetable creation for the nourishment and sustenance of animal life; for unless plants during the night absorbed oxygen from the atmosphere, and in the day time inhaled carbonic acid and liberated oxygen, we should have the air in crowded districts so completely saturated with carbon, as to be utterly unfitted for the purposes of respiration. Plants manifest their waking by a gradual expansion of their leaves, turning the upper surface to the light. Cordus was the first who noticed that the phenomenon of sleep witnessed in plants consists in their assuming the erect position and folding themselves together. These movements are best observed in the youngest leaves of plants.

Sleep being indispensable to the requirements of life, it ought to be a rule in every well-disciplined family to pursue such plans as are calculated to ensure its good effects. Children, especially those of the serous, lax, susceptible habit, should retire early to bed. Their sleeping apartments should be spacious and airy. Feather beds and down pillows should be entirely interdicted, and a good hard straw or horse hair mattress substituted. Curtains are objectionable, as they confine the heated air and

prevent its thorough renovation in the chamber. The temperature of the bed-room should be regulated by the thermometer. A cold or chilly bed room acts prejudicially on the juvenile constitution. The heat of the room should never be less than 58° in winter. Where a small fire is objected to, a large stone bottle placed in the room, holding three or four gallons of boiling water, and replenished morning and evening with a fresh supply, will be found to answer the purpose of warming the bed chamber; and as this is more cleanly and less dangerous than a fire, it is better adapted for the sleeping apartments of children. Sufficient bed clothing should be conceded as will ensure a comfortable warmth and promote an equable circulation. Regard being paid to the season, children ought to be allowed rather more covering in winter than summer, but never so much as to relax or oppress the system. A single blanket and coverlet, thick and heavy, for winter, and the same, only of lighter material, for summer, will be sufficient to protect the surface, and to ensure the necessary degree of warmth. Much bed clothing renders children uncomfortable. They cannot endure it, but kick and toss it off; yet how rarely do they suffer from the exposure, even for a considerable period during the night, in their night clothes alone. In some respects these little creatures evince more sense than their well-meant, but foolish, parents. How absurd it is to see young persons, more especially females, running about in the day in all weathers, with their chests exposed to every chilling

blast, and at night, as if to make up for their folly, heaping a double quantity of covering, by the folding of their bed clothes over those very parts which are now, in a great measure, defended from the least current likely to injure them. Children, when uncorrupted by the degenerate practices of their parents, mostly awake early, and are anxious to be dressed immediately. No prudent mother should thwart these most natural tendencies, but encourage them as much as possible, as fraught with immense benefit and advantage to her offspring. They tend more especially to fortify and strengthen the constitution; and if, in addition, the child early inhales the morning breezes, he will the better relish and digest his first daily meal, no matter how coarse the material.

CHAPTER XIII.

PROPHYLACTIC REMEDIAL TREATMENT OF THE HYDROCEPHALIC DIATHESIS.

When, as not infrequently happens, a medical practitioner is consulted respecting a child in the interval of the primary and secondary dentition, apparently suffering only from some trifling indisposition, with the additional suspicious feature that such child has previously lost a brother or a sister from cerebral disease, his suspicions should always be aroused, in order that prompt and efficient remedies may, if necessary, be adopted to arrest the progress or prevent the development of water brain fever. In all such cases his attention should be directed to the condition of the abdominal and cutaneous secretions.

The colour, consistency, frequency, and quantity of the alvine evacuations, and the appearance of the renal secretion—its turbidness, density, chemical reaction and constitution—are especially deserving of his notice. The free liberation of the contents of the bowels, and the due elimination of bile from the system, ought to be promoted by the exhibition of such medicines as are likely to effect these objects. According to the age of the child, one or two

grains of calomel, three or four of mercury, with chalk, with the same quantity of compound scammony powder, rhubarb or toasted jalap, may be administered daily, until the evacuations assume a more healthy character, and the bowels become more regular in their action. Gentle or active diuresis may be promoted by powdered squills, in conjunction with calomel, or by compound spirits of juniper, with small doses either of tincture of foxglove, turpentine, acetate or nitrate of potash, tincture of Spanish flies, sweet spirits of nitre, &c. Nitric acid is a valuable diuretic, tonic, and restorative, in the cachetic condition of the system, and, united with vegetable bitters, frequently produces the most salutary result, by improving the tone of the digestive functions, stimulating the kidneys, and correcting the alkaline tendency of their secretion.

The state of the skin should never be overlooked; if dry or parched, sodorifics are indicated. Of this class of remedies, the warm, hot air, vapour, and revulsion baths, are the most energetic; indeed, they may be said to be the only ones on which any reliance can be placed. In Hydrocephalus and other brain diseases, I prefer the use of the revulsion bath.*

* A revulsion bath, invented by my friend Dr. Collier, was submitted to the inspection of the Society of Arts in 1830. With the concurrence of that gentleman, I have introduced a modification of his apparatus, as shown in the frontispiece, which differs from the Doctor's in being made of wood, and having a moveable reservoir for cold water, with a tap to allow of a constant and uninterrupted flow on the head. The body of the bath may serve the purpose of a nursery tub to wash the children in.

The child may be immersed in hot water (96° to 98°) in a tub, and the head being allowed to rest on the lip of the bath, cold water may be poured over it, so that the water may flow into a vessel placed alongside the bath for that purpose. Counter irritants are also useful in warding off attacks of Hydrocephalus. As, for example, tartar emetic ointment rubbed behind the ears, or on the nape of the neck, or the establishment of an issue or seton in any convenient situation, the employment of moxas or a succession of blisters, encouraging the discharge by means of savine ointment. So, again, the use of embrocations composed of mustard, spirits of turpentine, and strong liquor of ammonia, either with or without the addition of croton oil, savine oil, or tartar emetic, or liniments composed of equal parts of compound iodine ointment and strong mercurial ointment, or Spanish fly and savine cerate, with a small proportion of camphire, are amongst the chief remedies of this class.* Of their undoubted efficacy in the premonitory stage of this disorder, a host of authorities might be adduced, were it needful, who have had ample opportunity of satisfying themselves of their great value as therapeutic agents. Dr. Cheyne placed the utmost confidence in external

* When attending Dr. Cumin's Lectures on Midwifery and Diseases of Children, in the University of Glasgow, the worthy Professor used to recommend his pupils not to rub the iodine ointment on the head, but merely to smear a piece of thick coarse flannel with a quantity of it, and then to lay the child's head upon it. His reasons were, that this mode of applying it produced little or no external or febrile excitement, without impairing its remedial efficacy.

applications,—such as blisters,—even in the advanced stage of the disease.

The diet of such children should be light and farinaceous, and in moderate quantity, that the stomach may not be oppressed. All stimulants should be avoided, whether in food or drink; as also should exciting games, or noisy exhibitions; and, when practicable, removal to a warmer and drier atmosphere is to be recommended. A residence having a south-westerly aspect should always be chosen. If the patient be located in an inland district,—the sea side; and if living near the sea,—an inland district should be sought, by way of change; but as soon as the more alarming signs disappear, the diet should be more nutritious, and the energies and the tissues are to be improved by promoting the vigour of the system, on the plan already proposed.

CHAPTER XIV.

TREATMENT.

The clinical indications in this malady are the same as those in the fevers of adults, to be modified, however, according to the various type of the Hydrocephalic diathesis. If a few cases will bear blood-letting, and may be promptly arrested by it, there is nothing new in the observation or the practice, for all our predecessors have recorded this as a noticeable fact, with regard to fevers in general. From the period that this disease sets in, the chain of febrile symptoms is as little interrupted as in any idiopathic continued fever known in our climate. Whether we regard the first, second, or third stages, the full complement of signs which constitute in their aggregate the disturbance called fever, are as regularly found in its train, as in that of any other type. Though the pulse becomes slower in the second stage, the fever holds on its course to the death. If convulsions commonly ensue in the third stage, it is only what may be seen in all fevers of the sero-nervous diathesis; and all who have written on prognostics, from the time of Hippocrates, long before this malady was

known, have inculcated that where fevers set in with contraction of the eye-brows, rolling of the eyes, sighing, moaning, and stridulence of the teeth, convulsions may be expected in the sequel. Therefore it is that I say, treat Hydrocephalus as you would any other nervous fever, and such treatment will give you the best chance of success. If it be characterized by strong inflammatory signs about the head, by deep coloured urine, strong pulse, and steadily increased heat of surface, injected tunica conjunctiva, urgent thirst, suffused face, and, above all, by disposition to violent restlessness, simulating in a degree that of phrenitis, blood-letting is just as admissible as it may be in a typhus, a synochus, a miliaria, or a lingering nervous fever, under the like modifications.

If, happily, now and then, such treatment may, within the first forty-eight hours, arrest the mischief, so also it may in inflammatory typhus. If, however, while the general condition of the bloodvessels indicate debility, that of the cerebral vessels shows distension or oppression, in the sinus system especially, a few leeches may be admissible. So also in other fevers. Or if debility, nervous irritation, and struma, are the characteristics of our patients, neither general nor topical depletion will offer reasonable expectation of benefit. The revulsion bath alluded to, and already described, should be employed twice a-day; or the sponge-cap,—formed of pieces of thin sponge, sewed together, and having a leathern strap as a border to secure it,—may be used to cool the head,

spirituous, or freezing, mixtures being employed to moisten it; and the straps thus connected with the border of the cap will act as a tourniquet, when required.

The τά ανω καθαρτιχα, or upward purgation by vomiting, is a means generally, and I think it may be said universally, banished from practice, ever since the inflammatory notion of Hydrocephalic essence has prevailed. Hence one feels timid in adducing it as an auxiliary to the treatment, and constrained to offer a defence for the infraction. "There is a fever," says a great authority of last century, "which insidiously creeps over its victims in a gradual loss of spirits, oppression, disturbed sleep, deep and frequent sighs, involuntary moaning, mental terror, unusual lassitude after motion; after the lapse of some days, these signs are followed by vertigo or headache, nausea, and vomiting of an insipid fluid, great prostration, &c. &c." Now I am willing to go along with that authority here quoted, (although he was writing on nervous fever, and I on Hydrocephalus,) that such disposition to vomiting may be prudently encouraged, (except in the more inflammatory species *impressed* and enumerated by the moderns,) as a means of assisting nature in her work of depuration; and with him I believe that the common precaution, "lest by vomiting we increase cephalic determination, or promote serous or sanguineous effusion," is a mere verbal bug-bear. A vomit of ipecacuanha worked off with mustard whey, is that which I

recommend in preference; and it may be repeated every evening, from the first sign of such tendency, to the extent of three evenings. Notwithstanding that vomiting is so constant an attendant on Hydrocephalus, yet the stomach ordinarily resists the action of emetics in their usual doses, and requires, in order to induce their operation, that they should be exhibited in increased quantity. Coindet regarded the obstinacy of the stomach, under large doses of emetic tartar, as a valuable diagnostic sign of the malady; and he speaks in the highest terms of the advantage to be derived from small doses of this medicine gradually augmented, in the prophylactic treatment of the disease, "which tends, he says, to change the morbid action of the brain."

Purgation is the next means of relief; and even as regards this, it were desirable that intestinal action should be elicited and sustained, rather than that violent impressions be made upon the bowels, by medicines whose action is commonly followed by constipation, just proportionate to the severity of their action. Calomel and jalap, as recommended by Dr. Cheyne, may be used for a beginning; but serous purges of cream of tartar, purges of toasted jalap, as preferred by Gölis, and castor oil, will be more effectual for a continuance; nor should a day pass without administering a clyster, in which, and with the purgatives, as in nervous fever, or subsultus, I would combine valerian, castor, assafœtida, and other remedies of that class.

I do not insist, or pin my faith more upon any

of the powerful medicines, which are enumerated as efficacious for Hydrocephalus, than I would upon those used in other fevers. A neutralized saline mixture, to which is added two or three of the salts of potassa, and a diuretic spirit or tincture, such as spirits of nitre, tincture of squills, or tincture of cantharides, will be found most efficacious.

Mercury, whether in the form of calomel or bichloride, or mixed with chalk, combined with digitalis in small doses, when it acts as a diuretic, may also be admissible, and will prove useful; but when used largely, from within and without, to produce its specific effects, it promises and realizes no more benefit than might be expected in the nervous fever of an adult.

Sal-volatile, in small doses, may be given with the food, in the stage of effusion; and as in any other protracted fever, so long as a critical effort can be expected from nature, suitable nutriment ought to be allowed.

Milk whey, milk gruel, and when the impetus of the fever is followed by paleness, weak beef tea, chicken broth, liquid jelly, and refreshing drinks, such as water flavoured with Rhine wine, are not objectionable; weak gum water, or drinks of quince seed, flavoured with honey, may also be employed in moderation, just sufficient to moisten the mucous membrane.

As in low nervous fever, when the irritation is chiefly nervous, and before effusion has advanced, I would not hesitate to use minute doses of laudanum,

syrup of poppies, in soothing doses, combined with castor, Hoffman's anodyne, and other medicines, for diminishing nervous susceptibility; the bowels having been first brought into frequent, and, if possible, steady action.

Counter irritants, in the second and third stages of the disease, are often productive of the greatest benefit. Those which are known to act most speedily should be preferred. Vinegar of Spanish fly, strong liquor of ammonia, and moxas, will usually answer this end. Liniments, composed of equal parts of turpentine, liquid ammonia, and olive oil; or soap liniment and Croton oil, or tartar emetic, may also be employed.

From the foregoing observations, it will appear that the principal indications to be fulfilled in the treatment of this malady are, if possible, to produce a favourable crisis, by the steady and free action of the abdominal or cutaneous secretions. Hence free catharsis, free diuresis, or free diaphoresis, by whatever means these separate states of the system can be obtained, offer the most reasonable prospect of recovery. The employment of specific medicines, such as bichloride of mercury, iodine, tincture of Spanish fly, tartar emetic, &c., appears to me to be founded on erroneous impressions, touching the nature and essence of the disorder, and in the majority of cases will be utterly inadequate to the end proposed.

Before I conclude my remarks on the treatment of this affection, I shall briefly allude to the recom-

mendation of Gölis, to employ foxglove in conjunction with sedatives, for the purpose of relieving the violent convulsions and spinal cramps which so frequently occur towards the fatal termination of the disease. This distinguished physician remarked, and my own experience corroborates the statement, that digitalis does not produce that benefit in the treatment of this disorder, which some authorities have attributed to its use. Then why continue to recommend its employment? Surely we are not justified in administering a powerful and dangerous medicine, merely to allay inordinate spasmodic action, when, in order to accomplish this object, we must necessarily exhibit it in such doses as would, under ordinary circumstances, jeopardize the life of our patient. If the physician in this serious affection can do no good, his duty is to avoid doing mischief. He is not called upon to prescribe a potent and uncertain medicine, simply as a precautionary measure to prevent the accession of convulsions, which may never take place, when, at the same time, the remedy made use of, may by its sedative action, thwart or overpower the vis-medicatrix in her efforts at cure.

In convalescence from Hydrocephalus, a similar plan should be pursued as recommended in the chapter on prophylactic remedial treatment. Food of a nutritious, but non-exciting, quality, should be given in small quantities. It should not be swallowed hastily, but well masticated, and thoroughly mixed with the saliva, ere it leaves the mouth. All unusual exertion should be sedulously avoided; but

a change in the sleeping apartments, so soon as it can be borne, is often extremely beneficial, and conducive to a speedy recovery. The bed-room should be well-aired and thoroughly ventilated, by throwing down the upper windows for half-an-hour, two or three times a day, the child at the same time being protected from any current of air, by the position of the bed, which should be opposite to the windows. The convalescent should not be permitted to mix in with the sports or amusements of his playmates, until he has attained sufficient strength to indulge in moderate out-door exercise. When practicable, removal to a more salubrious atmosphere should never be delayed longer than is absolutely necessary to ensure sufficient strength in the invalid to undertake the journey without fatigue.

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ERRATA.

Page 13. *Notes*, 1st line, for *béhiques* read *béchiques*.

93. 11th line from top, for *subtile* read *subtle*.

103. 3rd line from top, for *Cloaccina* read *Cloacina*.

158. 6th line from bottom, for *sodorifics* read *sudorifics*.

165. 5th line from top, for *potassa* read *potash*.