From the author
to the University Library
of Glasgow

Fig. 1.

Fig. 2.

Fig

MANAGEMENT AND DISEASES

OF

INFANTS,

Under the Influence

OF THE

CLIMATE OF INDIA,

BEING INSTRUCTIONS TO MOTHERS AND PARENTS, IN SITUATIONS WHERE MEDICAL AID IS NOT TO BE OBTAINED,

AND

A GUIDE TO MEDICAL MEN,

INEXPERIENCED IN THE NURSERY AND THE TREATMENT OF TROPICAL INFANTILE DISEASE.

ILLUSTRATED BY COLOURED PLATES.

BY

FREDERICK CORBYN, Esq.

Member of the Royal College of Surgeons, London; Surgeon on the Bengal Establishment; and Author of a Treatise on the late Epidemic Cholera, and Taraii Fever.

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1828.

IN TESTIMONY OF RESPECT

TO

JAMES MEIK,
ALEXANDER GIBB,
AND
ALEXANDER OGILVY, } ESQRS.

Members of the Medical Board

TO

THE BENGAL ESTABLISHMENT,

THE FOLLOWING PAGES ARE INSCRIBED

BY THEIR

FAITHFUL AND OBEDIENT SERVANT,

THE AUTHOR.

FORT WILLIAM,
BENGAL, 1828.

PREFACE.

It has been a subject of general remark, that during the period in which India has been under the British Government, although possessing a Medical Establishment not surpassed in any part of the world for talents and respectability, no work professedly designed to treat of the general diseases of the country, has been offered to the public.

The only authors on diseases of tropical climates, have been naval practitioners, who, it was not to be expected, could have obtained by experience a thorough knowledge of the influence of climate, and its effects upon *resident* constitutions, however extensive their professional acquirements in other respects might have been; and thus young Medical Gentlemen on the Establishment, have commenced, and continued their professional duties, unsupported by the experience of their predecessors and seniors, and without any guide on which they could with confidence rely for direction.

In the work now offered to the public, the author has endeavoured to supply the desideratum, so far as respects the management, nursing, and diseases of children. The mortality which has been, and

continues to be, so lamentably great among infants in India, may, in a very great degree, be traced to the peculiar situation, in which young Mothers are placed in different parts of the country. Marrying, as it often happens, a few months after their arrival from Europe, and not unfrequently at an early age, they have the important office of a mother to discharge, with all its anxieties and cares, where advice, from the experienced of their own sex, cannot be obtained, and often in those parts of the country, where both medical assistance and female acquaintance are alike absent. It must be conceded, that there has been no subject more neglected than that of the diseases of infants; while no one in the medical department has had superior claims upon particular attention. The foundation of a good or bad constitution is laid in infancy, and in either respect depends almost wholly upon the management pursued in the nursery. Every lady, therefore, in India, should make it a matter of serious consideration, to endeavour to acquaint herself with a proper method of managing her offspring during their years of infancy, and thus become as much as possible independent of advice and consultation with others.

The agriculturist pays his whole attention to the plant, well knowing that the tree and fruit depend upon his fostering care, and his delicate management and culture, while it progressively ascends to maturity. The meanest of the animal creation are not indifferent to their young; but obedient to the simple

laws of nature, and guided by instinct, they watch over them with perseverance and care. From the human species, possessing the advantages of intellectual endowments, more is expected in the discharge of the maternal office than merely instinctive operations.

It is a fact, the evil consequences of which are sufficiently obvious, that the management of children is not made a branch of a young female's education; indeed, mothers seem to keep their daughters entirely excluded from attention to the administration of the nursery, and the knowledge of a mother's important duties. The expediency of such instruction to young females, whose destiny is for India, is so apparent, and the neglect of it, especially where scarcely any information whatever can be derived from any source, is so replete with danger, that the consideration of it was the occasion of my having first taken upon myself the duty of contributing, according to my ability, towards the supply of what is so obviously important for qualifying them to fill the sphere of domestic life.

It will be perceived, that the system of instruction which I have adopted in the following pages, differs from every other hitherto written with the professed design of being a family guide.

I have endeavoured to be intelligible to my female readers, while I have also intended to be serviceable to my professional brethren, especially to those of

them who leave Europe without making the subject of these pages a part of their professional studies.

It is impossible to give any directions for the cure of disease, without showing how it is engendered, and displaying the functions of the animal economy which it attacks; I have, therefore, given anatomical illustrations, both by description, and by plates, to enable my readers, to some considerable extent, to prescribe, with a knowledge of the formation, situation, and offices of the functions deranged, and understand more perfectly both cause and effect. This will secure them from the danger of being led astray by those false principles, which are inculcated by publications at present extant, and written by persons, who are more distinguished for being the venders of nostrums, than respected for being duly educated practitioners.

While it would be egotism in me to laud my own labours, it would, at the same time, be sacrificing truth at the shrine of that false delicacy assumed by many preface-writers, who declare themselves to be the least capable of performing the work which they profess to have accomplished, to say that I think a work like the one comprised in the following pages is not required, and will not be of public utility. On the contrary, I candidly declare my belief, that my book will, with the blessing of God, be of great service, if attentively perused. I have travelled nearly to the most northern and southern stations, as well as to those of the east and west, on

the Bengal Establishment; by which means I have obtained an extensive knowledge of the climate; and by considerable practice in the medical treatment of children, to which an innate feeling of partiality for them has particularly directed my attention, I unhesitatingly confess, that I have felt a degree of competency for the task I have undertaken; and if I meet with the approbation of my professional brethren, and prove myself to be really useful to mothers and nurses, my labour bestowed on the work I shall consider as amply repaid.

In the selection of my plates, I have been greatly indebted to Willan and Alibert. Those who are acquainted with their invaluable works will be best able to estimate the choice I have made.

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Notice to the Reader.

The Author is fully aware that medical works, containing information on the general practice of medicine, are retained by families as books of reference only, and that on the occasion of the appearance of any particular disease, a reference to that affection, symptoms, and treatment, has ordinarily been deemed sufficient to enable the reader to do what was expedient and necessary at the moment: but he also knows, from experience, that the superficial knowledge thus acquired is useless and dangerous. In the arrangement and system laid down in the following pages, such succinct reference, instead of meeting the mother's expectation, will, it is more than probable, lead her astray, and the Author's labours tend to injurious consequences, instead of usefulness. His aim has been, to ground parents in the knowledge of a correct pathology, as well as in a sound practice as to the systematic treatment of disease: and the Author is full of hope, that if parents will give the work a perusal from the commencement to the end, they will find the plan of instruction well adapted to obtain that important object; and what would otherwise prove intricate and abstruse, become decidedly simple and clear: in fine, mothers will be prepared to meet any sudden or alarming attack of disease with judgment, confidence, and decision.

PART I.

MANAGEMENT OF CHILDREN BEFORE AND AFTER BIRTH.

Section I.

THE treatment of children before their birth, may appear a novel subject, but it cannot be considered as unimportant. It would, perhaps, have been fortunate for many, if the learned disquisitions on the progress of gestation, which have been written and studied with the deepest interest by the physiological and scientific part of the medical profession, had been brought more generally under the particular attention of mothers, and applied by them to the practical purposes which they are designed to subserve; for, so far as my own experience and observation extend, I do not hesitate to declare it to be my opinion, that as many deaths occur among children, in consequence of mismanagement before parturition, as from other causes after that event.

In India, it is not unusual for young ladies to marry a few months after they land, and are liberated at once, at least *ordinarily*, from great restraint. They are united in the bonds of wedlock, frequently at the age of 16 or 17; indeed, I know several instances of marriage at 14 years of age. No wonder, therefore, that they are often helpless, and in great distress, in one of the most important and serious moments of their lives, at a period too when the vivacity of youth is not prepared for the grave performance of maternal duties. Attention to the following system, will guard such young mothers against the danger to which they are too often exposed.

Section II.

First and second Months of Pregnancy.

It is customary, on marriage, for a bride to be ushered into all the gaiety her friends can promote on the happy oc-

casion. Balls, and every species of active exercise which tend to enliven the change, ensue: there is little thought, however, that the most serious consequences are probably taking place in the womb during these first months after marriage. The suppression of the usual discharges is the sign of conception: then a change takes place in the whole constitution. The circulation of the blood becomes thus affected, whence several unpleasant feelings occur; such as lassitude, heaviness, pain in the head, nausea, a sensation of dizziness, &c. The inexperienced, indeed, imagine these symptoms to be a complaint, which is not unusually called "a little bilious," and have recourse to calomel and purgatives to remove it. These, however, are misplaced; for nature herself manages the business, and a gentle dose of castor oil will alone suffice, should the confined state of the bowels require medicine.

SECTION III.

Third and fourth Months of Pregnancy.

Signs of pregnancy will now be established: one of the most prominent is, the stomach often rejects both breakfast and dinner. This sickness is generally sudden in accession, so that there is scarcely time to quit the room. A confined state of the bowels is commonly complained of; but gentle doses of castor oil only will be necessary. The child is now completely formed. A sensation will be occasionally felt in the womb, like the snapping of the fingers: this is the movement of the child. Experienced mothers understand this feeling so well, that they frequently calculate the time of gestation by it; while other persons seldom observe the event, believing it to be merely a slight griping pain, or a gentle spasm. It will now be necessary to discontinue stays, and remove every pressure, as the action of the child in the womb must be without restraint, otherwise the just proportion, and especially the health of the infant, will be materially endangered after birth. Many ladies will not abide by this advice, and young mothers will have much to do to combat their

opinions. One lady will say, "Experience surpasses all talking and opinions of medical men, who know nothing about it: I have had six children, and always wore my stays, and the bone in them, even to the last day; so a fig for doctors' opinions!" While another will argue that, "Indeed pressure is absolutely necessary, were it for no other purpose than to support the back." A third declaring at the same time, "That she never heard so ridiculous a thing in her life; and that carrying an infant would be insupportable, without the delightful pressure which stays afford." I am acquainted with a lady, who declared she knew an instance herself, where a young mother had omitted to wear them, and the consequence was, the womb burst for want of proper restraint: and that this was actually the opinion of the medical man! The poor young lady died in consequence, "absolutely in consequence of the womb enlarging to such an enormous size!" After this, what will not ladies, who advocate stays, advance, even contrary to ocular demonstration of the millions of females in India, who do not wear any pressure over the womb? The whole animal creation is, of itself, a sufficient argument against such absurd opinions. But it is on record, as a well established fact, that all children whose mothers have worn stays very tight, have generally had indentations in the head: indeed the heads of some children are materially depressed. I never recollect this irregularity in shape in the heads of offspring of poor parents. Allowing that it does not invariably affect infancy, it certainly often tends to injure the child before it attains the age of maturity. I am well persuaded, that many an instance of disease called water in the head, is nothing more than the effect of this compression of it. Poor women, who seldom accustom themselves to the wearing of stays, have usually the stoutest and the finest infants, and suffer much less inconvenience during pregnancy: with them, indeed, it is in general the most healthy period of their lives. The movement of the child above alluded to, is termed by mothers "quickening." It is a delicate period, and the whole constitution sympathizes during this, as well as the preceding months.

Ladies ought to keep themselves perfectly quiet; and jumping in or out of a carriage or buggy, running down or up steps, skipping, riding on horseback, are to be avoided as dangerous. Disregard to this advice may subject the pregnant to a miscarriage, which unfortunately having once occurred, often recurs, and becomes habitual; and not only makes the lives of those who are fond of infants extremely desponding, but destroys the constitution.

Section IV.

Fifth and sixth Months of Pregnancy.

The womb enlarges the fifth and sixth months. Heat in the palms of the hands, flushes about the face, heartburn, and a sense of weight over the eyes, are symptoms which are sometimes experienced. Should the bowels require it, two tablespoonfuls of magnesia should now be taken in a small wine glass of water; and the dose be repeated every three or four days. In case the magnesia fails to operate singly, two tablespoonfuls of Epsom salts may be advisable. Perfect quietness is necessary, and over-exertion is dangerous, especially such as pulling out heavy drawers, reaching at high almirahs, or stooping to lift weights from the ground. Care must be taken not to lean so as to rest the stomach upon a table when writing, drawing, &c. Avoid late hours; be careful not to eat food of an indigestible nature, nor to take too much at once: the best diet is fowl, lamb, mutton, and light pudding. One or two glasses of sherry, or a long beer glass* of Hodgson's pale ale, will be quite sufficient for the daily beverage. If the constitution be weak, the less the stomach is loaded the better. Small replenishments are the best; for if the frame be delicate, the stomach will be usually so too: and as the condition of the latter depends upon a certain quantity of bile and gastric juice, according to the quantity of good blood in the system, it will be evident, that one who is of that temperament said to be ple-

* What is known in India by the name of a *lambá peálá*.

thoric, or full of blood, can eat and digest any thing. Not so with the nervous, delicate habit. When food is taken in a large quantity by the latter, it lies upon the stomach as a dead weight, on account of the deficiency of the two active juices before mentioned. The less, therefore, of this weight in the stomach, the less will be the sensation of pressure and pain in the head, and the less will the patient be annoyed with restless and sleepless nights. The heartburn increases this month. Magnesia, or Epsom salts, if necessary, should be taken as before.

Section V.

Seventh and eighth Months of Pregnancy.

It sometimes occurs, that a white matter is discharged. This is generally of no consequence, and the less interfered with the better, unless it is in very large quantities*; in which case medical advice should be taken. The heartburn now becomes more annoying, so that the magnesia will almost daily be rendered necessary. The less butter, or rich, oily dishes, the better. The womb increases to a considerable size; quiet is now necessary: swelling of the legs takes place; the stomach feels quite distended and tight; the breathing is often difficult, and irritability of stomach is generally experienced, together with tension and pain about the nipples, from which a watery fluid is frequently discharged. A little sweet oil is to be put on the nipples, which will remove the pain. Magnesia must be continued as usual.

Section VI.

Ninth Month of Pregnancy.

The less moving about the better. Great inconvenience is now experienced in lying upon the sides. The body

* When it is called Fluor albus professionally, or Leucorrhœa, from the Greek words "white," and "to flow."

and head should be raised with pillows; indeed it will sometimes be necessary to raise to the extent of a sitting posture. The legs occasionally swell to a great size. The nipples become extremely painful and sore. If *very much* inflamed and swelled, apply a bread and milk poultice, which will be all that is requisite. Attention to the bowels is at this period of the utmost importance.

SECTION VII.

Confinement.

It is the custom in India for ladies to be solely confined by native women, or the wives of European soldiers. The former are the most superstitious people in the world, and the first preparation made by one of them for her important office is incantation and offerings to some heathen god. Her mode of proceeding is the most rough and inhuman conceivable. Although the all-wise Creator so formed all the sex, that travail should be attended with pain, yet the delivery is entirely the work of his almighty hands; or how is it that the wives of European soldiers on a march, on the road side often deliver themselves? I was informed by an European servant whom I had employed to nurse a lady not long since, that she had delivered herself; with her own hands cut the navel-string, and that she did not experience the least ill effects from so doing. What made it the more remarkable was, that this woman had very delicate health. The native women of India often deliver themselves. Females of barbarous nations have no assistance: and until proof can be given, that all are not formed alike, we must not take from the mercy and wisdom evinced by the Creator. Accidents, however, do occur sometimes, as well as malformations, which require the aid of art. In the first instance, the aid of native women is scarcely necessary, except to tie and cut the navel-string; in the second instance, they are thrown into despair, and will attempt nothing, as they know nothing. The latter class of persons being usually the wives of private Europeans, what can they know?

They have, in fact, the same superstition, only in another way; they have their signs, omens, and warnings, before confinement; commence a detail of wonderful and dangerous cases, the visionary phantoms of their own imaginations. Although these poor, deluded women are sometimes quite honest in their intentions, their busy and ignorant minds have the most dangerous tendency: they will begin—"Ah! dear me, madam! I once did know (poor dear creature, it grieves me to think of it!) such a nice lady; and the child was crossways, and could not be born; and there was, you know, Mrs. So-and-so, and she had not strength enough to bring her poor dear baby into the world; and as for that good lady, poor Mrs. Thingembob! she was quite crooked, you know, madam, and the doctors said it had been much better had she never been married." And so the poor lady, before she is confined, thinks and dreams of nothing, but that the child lies crossways, or that she will not have strength enough to deliver the child, or that she may be deformed; thus producing an anxiety and terror in the mind, enough of itself to cause fever and accelerate delivery: at all events, the distress of suspense as to the issue surpasses by far the pain of travail.

Now it happens, through the mercy of the all-wise Creator, that there is scarcely a difficult case in one hundred. If the foregoing rules are attended to, all that is required in labour is a person, when the child is born, to tie and cut the navel-string. Did native and European attendants alone do this, I would acknowledge their usefulness. "A little knowledge, however, is a dangerous thing;" and hence they must be always busy, inquisitive, and take all the work out of the hands of the ever-present Deliverer, and put it in their own.

To detail the minutiæ of delivery is not the intention of this work. The author recommends all ladies to be near medical aid during confinement, and would strongly advise their soliciting the attendance of a medical gentleman. In this case, ladies will find themselves attended by those who have devoted a cultivated mind to the study of such cases, and made it a branch of science and

professional education. Their manners are generally mild and gentle; they observe every proper delicacy and reserve. The infant is preserved from receiving injury, and a mother may repose herself in such hands with perfect confidence and safety. Many, I am aware, advance only one objection; but that casts a slur upon their own parents, and upon almost every lady in Britain, where females are almost invariably attended by medical men. Were I asked, however, would it not be better that this should be a female's occupation? my answer would decidedly be in the affirmative; but until a respectable, well educated class of females are brought up exclusively to it as a profession, and in a school for that purpose, undergo an examination by a college of professors, receive certificates of their proficiency from that college, and by act of parliament are thus permitted to practise, I am decidedly of opinion, the employment of women will always be replete with danger, both to the mother and to the child. To allude to the diseases of females would be foreign to the object of this work; yet I might mention instances of great danger which have fallen under my own observation, from the ignorance of native women. I was once called to a lady who had been three days in confinement. The husband wished me to make the woman who was attending on the lady the channel of communication; but I urged the necessity of a personal interview, which being complied with, I found the lady in a very dangerous state, arising from the ignorance of this woman, who had broken what is called the waters, by unnecessary interference. This rendered the lady's delivery out of the reach of nature, she being quite exhausted by having adhered to the directions of this ignorant woman. Indeed, most mothers in India are diseased more or less in the womb, and very many are inverted, from the violent measures in use by these uninstructed persons.

On being consulted by a gentleman in India on a case of serious uterine affection, he candidly told me, that his lady was *compelled* at one time to be attended by a medical gentleman in confinement, who took that opportunity

of putting her womb right; but being subsequently delivered by a native female, a second displacement was the consequence. I was at another time, in attendance on a lady, where the afterbirth was a long time before it could be brought away. An European nurse was the midwife on this occasion. She manifested great alarm before the lady and husband, telling the patient she must do this and that, or she would certainly die, which excited the greatest fear in the poor patient's mind. At this juncture I was called in, and found, instead of any cause of alarm, that all was going on admirably well, in consequence of the husband not permitting the midwife's unnecessary interference.

Section VIII.

Nursing.

In the higher stations of life in Britain, ladies have deemed the office of nursing derogatory; as in their opinion, it assumes the appearance of the poorer orders of persons. Were it in their power, I have no doubt but they would desire likewise, that their shape, make, and organs, should distinguish them from the inferior class of mankind. Although a just and beneficent Creator, in the work of his hands, formed all things in grades, so that there should be rich and poor, learned and unlearned, he has declared that he exacts the same obedience from all, as in his justice he makes no distinction between persons.

Now it frequently happens, amidst the revolutions of events, that the poor are exalted, and the exalted brought to poverty. Such vicissitudes are of daily occurrence; and they present this important subject to our contemplation, that all spring from the same stock, must go through the same sorrow and travail, and experience one similar event at last. But it is a question appropriate in this place, Which is the mother who will be most acceptable in the sight of God? She, who fosters and brings up her offspring at her own bosom; or she who sends them out to careless hirelings, the consequence of

which is, that either the lady's or the poor woman's child generally suffers? Lessening the delicacy of shape, or the elegance of figure, is often urged against nursing; deprivation from balls, routes, and parties is a prominent objection: while delicacy of constitution, dread of debility, and general ill health, are among the most plausible arguments. Thus, then, the fifth commandment is often broken by children, who are sensible that they have not had tender, nursing mothers; and many, sinking under the indifferent, careless deputy, fall a sacrifice to this separation from maternal affection and care. The mother, likewise, is guilty of the greatest disobedience to the command of God.

But let us enquire, who are these deputies in India? They are native women! Persons, who generally eat opium, and smoke a poisonous narcotic, called *bhang;* who will promise to abide solely and wholly by the food given to them from their mistress's table, or to that which is prepared by the lady's cook; but will obtain, by an insidious contrivance, garlic, ghee, &c. and partake of the most sour and acrid vegetables; all of which the poor little infant sucks to a certain degree in the milk.

I have witnessed the most painful scenes of chicanery in the native nurses or *dhyes* in India. Their first object is to make money; their own comfort is paramount; and ingratitude is invariably expressed. I have known ladies bestow on them repeated presents of clothes and money, to induce them to be kind to their infants, but without avail; kindness, in fact, seemed to induce, in many of them, impudence and threats, for the purpose of exaction. On one melancholy occasion, I was called out to see a lady's *dhye*, who was taken ill; indeed, she was supposed to be dying of the cholera. When I arrived, I found the woman in a state of inebriation. She was nurse to a lovely infant, who was taken suddenly ill on the following morning, and died a few hours after. It would be painful to dwell on the effect felt by the afflicted parents. But this, perhaps, is not a single case of the kind. It is also true, as I have been repeatedly told by mothers, that the *dhyes* have no milk; in one instance, it occurred

in a fine healthy young woman. They have, in fact, an extraordinary power of drawing back the suck, and producing it at pleasure, a trick most probably practised in order to alarm and excite the anxiety of the parents, with a view of promoting their pecuniary objects. Among other strange circumstances, I remember being told by a lady, who had lost many children, that she had come to a determination not to nurse again, as she ascribed the death of her dear infants to her own milk. The lady was particularly healthy and stout. I therefore strongly remonstrated against such an erroneous conclusion. The *dhye* who had been entertained, appeared to be all that could be desired; but no sooner was the child born, than every artful trick began to be played off; and the lady was compelled, against her own wish, to nurse. Her infant thrived, and became exceedingly stout and healthy. Those who understand medicine, and the character and nature of milk, will confirm the assertion, that the milk of the mother, when a child is first born, is quite different to that at any other period; in short the first milk is quite medicinal, and has an extraordinary influence on the infant's constitution, which is one of the most important points always to bear in mind: so that if a lady determine not to nurse, she ought at least for the first ten or twelve days to give this medicinal nourishment. Among other instances of the sophistry found in this class of natives, I have been informed, (of the fact I am not certain,) that it is customary among them to give opium to infants, when they are restless and troublesome at night. Mothers should pay attention to the report.

As the danger arising from the bad conduct of *dhyes* is so great, I trust that ladies in India will see the necessity of nursing their own children. It is often the case, that becoming a nurse will strengthen that constitution which was previously weakly; and if attention be paid to light bandaging, and to bracing the stays well up after confinement, it will be found that the elegance of figure will not be injured. I know a lady, who several months after her confinement omitted wearing stays. She of course found herself losing shape; but on resuming them, she recovered

her former figure. There are, it is true, some instances in which nursing is not admissible; but in ordinary cases, where there is ever so little milk, I would rather give that little, (subject to the rules I am about to give respecting making good nurses, under the article *Food,)* than incur the danger arising from native nurses. I have no doubt but the blessing of God will attend the effort, as mothers, excepting rare instances, by nature have means to nurse their offspring, and it is an offence against the Creator not to fulfil his will. I have heard all who nurse their own children declare, that it is a delightful office, indeed one of the most endearing occupations conceivable; and when my professional duty has compelled me to request such ladies to wean, I have always found more difficulty to wean the mother than the child. Dr. Ramsbotham has made the following observations on the duty of nursing, in his late work on Midwifery:—"The duty of maternal suckling is so imperious on all animals, so natural, that it is almost needless to urge this performance to woman, the compliance with which secures many valuable advantages to the mother and her infant: the voluntary refusal of it is replete with injury to both. The former tends to forward and to complete those changes which are for weeks progressive; the latter interferes with them, and renders a woman liable to disease in the womb and breasts under their operation. A voluntary refusal to suckle on the part of any woman, evinces a want of the tenderest feelings, and of maternal affection for her new-born babe. But it does not merely implicate a dereliction of duty, it likewise involves an evasion of the strongest impulses of the human heart; it occasions a transfer of filial affection, gratitude, and obedience from the mother to a hireling, who cannot appreciate their value. Who is prepared to say what may be the future result of this transfer? After a denial of its natural nourishment, after bereaving the babe of its only present birthright, is it surprizing that instances of filial estrangement should occur, or when once produced, that it should become permanent? May we not attribute some of those disgusting alienations occasionally met with in

certain ranks, to the neglect of this delightful office? Though human institutions admit of the introduction of ranks and degrees into society, the Divine will has ordained, that all women shall be equally liable to the pains and perils of childbirth, and to its consequences. Milk, therefore, flows similarly into the breast of the princess and the peasant, and frequently into those of the former in greater abundance, from better fare: it must thence be repelled or absorbed, under the risk of suppuration, and febrile affections, and under the repeated exhibition of nauseous purgatives. That woman but ill consults her future health and comfort, who voluntarily declines this engaging office."

The author of the London Practice of Midwifery has remarked, that "from numerous causes, a woman may be unable to suckle her own child: in which case, the next best thing for the infant is the breast of another woman of the same age as its mother, or as near as possible; for there is a great difference between the milk of a woman who has lain in for eight or nine months. But wet nurses are only to be had recourse to in cases of absolute necessity. In general, society suffers from this class of people; for though the foster child may go on very well, yet the child of the wet nurse is by this means deprived of its proper support, brought up by the hand, perhaps, under the care of one who has little regard to its welfare, and in such circumstances it frequently dies. There are some women, however, who would not give up their amusements for all the children in Europe. These women will weigh the comparative importance of things, placing their balls and routes in one scale, and their infant in the other; when the pleasure preponderates, and the child suffers."

SECTION IX.

Directions for the Nurse.

As I think it necessary that a child should depend solely upon a healthy mother's milk for subsistence for six months, I discountenance any kind of feeding previous

to that date, except in instances where the milk is extremely small in quantity.

But let us first advert to mothers, who have the usual and natural quantity. Now we must remember, that European ladies in India are not in that climate in which they were born, and where the constitution is braced and strengthened; but in one which, from excessive heat, is unhealthy and debilitating. From this consideration, the incompetency of European ladies to nurse their own infants has been deduced: this deduction having the show of reason in its favour, has been established, so that medical men, as well as experienced females, have held it as an uncontroverted opinion; and no doubt it will be strongly advocated and supported against any thing I can say. Against this array drawn up before me, I contend not with a view of certain triumph, because, however strong my ground, I may not succeed. I myself was once under the sway of this strange delusion, and held all the opinions to be contrary to good sense, which some of our fair countrywomen advocated in support of ladies nursing their own children in India; and in fact, urged in the strongest terms the indispensable necessity of native *dhyes*. Little did I think my own conclusion so erroneous, till I fortunately found it opposed by actual experience, and discovered that ladies of feeble constitution, on nursing, in many instances actually gained strength.

It must be granted, however, that it is the general belief that native women are the best nurses, in comparison with European ladies; but it is but fair to enquire, on what grounds? Is it because they are stronger?—because their food is richer and better;—because they have richer and purer blood flowing in their veins?—because they will partake of the appropriate food, and abide by all necessary instructions as to diet?—because they have more affection and loving feeling towards the child? May we not negative such conclusions, and confidently assert, that the argument is against native nurses? One European will almost overpower, by his innate superior strength, four native men; and may we not assert, that the same

proportion of comparative strength belongs to the other sex, begging my fair readers' pardon for making such a simile; but any simile will be acceptable, I trust, in making our argument tenable. As the European is of stronger members than the native, so likewise is the milk of the former stronger and finer than that of the latter. How many poor dear babes are heard screaming and crying, their peevishness being frequently ascribed to sickness or irritability in the bowels, when in all probability it arises solely from hunger, not receiving any substantial nourishment in the poor and watery milk of a native woman. The cause thus being mistaken, castor oil or rhubarb is deemed expedient, which adds to the little sufferer's misfortunes, and tends greatly to increase its screaming: it is then ascribed to some organic affection, calling for calomel and mercurial friction, when the infant, being quite exhausted, falls a victim! So serious are the effects from such causes! so alarming the mistakes from false conclusions! I can only grant, therefore, that in some degree, ladies in India have poorer milk, and are considerably more delicate in constitution than those in England: notwithstanding, their milk is comparatively cream to that of any native woman's, and their capacity for nursing is fully four times as great. Ladies must, however, pursue a course different from those in Europe, and make up the deficiency arising from the influence of climate by a peculiar diet. This I now proceed to mention; and if it be rigidly followed, I have no doubt most mothers will become excellent nurses.

SECTION X.

Diet for Nurses.

The first day after that of confinement, soup must be taken, made very strong, of lamb, mutton, or beef. Fat should be removed from the meat when it is put into the saucepan, as it only makes the soup oily, and never adds to nourishment: on the contrary, no sooner does it reach the stomach, than it not unfrequently changes to an acrid acid, which will invariably affect the milk. A bason of this,

twice a day, may be taken. On the second day, soojee, barley, or oatmeal porridge, is advisable for breakfast, and during the day, soup as before, with two long beer glasses of pale ale, and a beverage made as follows:—Procure some common country barley, and have the husks taken off in the same way the natives remove them from rice*: two chittacks of this, to be washed well in a dozen waters, until quite clean; then it is pounded, and put into an iron saucepan to four pints of water, which must be boiled to two pints. Strain it, while warm, through coarse muslin. Care should be observed to stir it up†, without ceasing, while boiling. Three tumblers of this will be necessary in the course of the day; and two during the night‡. This will produce the richest, sweetest, and purest milk conceivable. It has a delightful effect generally upon an infant's bowels, keeping them perfectly regular. Besides, it is a very pleasant drink, always procurable, and supports the strength in an astonishing manner. The mother, after confinement, if all has gone on well, ought to be on a couch in three days, and out in six; as lying in bed is extremely weakening, without any purpose being gained. There are some, in India, who quit their beds on the second day; but this I think is far from being proper. I know a lady, who has had six children, and who told me it was customary with her to dress herself immediately after confinement, and sit up the second day: which system she had adopted from the birth of her first child. These are experiments, and therefore cannot be recommended. At the same time, however, the old rule of confining a lady to her bed nine days, in a warm climate, is not only debilitating for the time, but may be the means of retarding a proper secretion of milk afterwards. The milk does not generally flow in the breast until the third day, so that it will be necessary to give the child two or three tea-spoonfuls of the above beverage; at four in the morning, at mid-day, and in the evening. The infant is to be put continually

* It will be preferable to make the barley first into meal.

† A wooden spoon should be used for this purpose.

‡ This preparation must be made twice a day, as it enters into a state of fermentation after a lapse of a few hours, and then changes to an acid.

to the breast, as the drawing hastens the coming of the milk; and a neglect of this rule sometimes prevents the secretion altogether. As soon, however, as the mother is up, to eat fish and rice for breakfast is advisable, or sujee with eggs, together with such food as lamb, mutton, beef curry, and rice, for dinner, with a bottle of Hodgson's pale ale. In the evening, tea and toast may be sufficient. The beverage alluded to, however, is to be included. Rising early every morning, and taking a drive out in a buggy or carriage, is undeniably of the first importance: the fresh air is the true restorative in India, and a great stomachic, exciting to a hearty breakfast; while sleeping in bed has the most enervating effect imaginable on the constitution. It is the only period in the hot weather, when the air is cool and light, and the hour when it can be enjoyed: notwithstanding this well known fact, it is a novelty in the east, to see ladies taking morning exercise. I have been frequently told by them, it did not agree with their "peculiarity of constitution." The fact is, I presume, no real trial was ever given. Apathy and inaptitude to exertion, arising from the climate, have the greatest influence in swaying the mind against a habit so beneficial; which is to be lamented, as ladies would enjoy their regular rest, and good health, if they changed this system. The ordinary complaint they make to medical men, is the impossibility they experience to sleep at night; owing, beyond dispute, to two things; first, they sleep in the day; and second, they never rise early in the morning. Let them avoid one, and do the other, and the case, I may safely say, will be materially altered. Tone will be imparted to the stomach, the body will become braced, and the mind exhilarated, as never failing consequences; indeed the whole constitution will experience a renovating effect.

To go to bed early, is another point to be urged as indispensable in a nurse, rest being decidedly requisite for the formation of milk; and those who are desirous of becoming real good nurses, must forego all parties and gay society, for family retirement and domestic serenity, —a hard and a terrible restriction, it must be granted,

on the lively, gay, and spirited young lady! But how soon the fascinating prospect of a gay ball, the enchanting hope of a masquerade, the pleasing anticipation of the fancy play, will be found to be vain delusion and empty joy, in comparison with the charms of the playful caresses of a lovely offspring, the enjoyment of health, a fond and affectionate partner, and a peaceful, happy dwelling.

SECTION XI.

Preparation before Birth.

The first thoughts are generally directed to the dress of the promised babe. As testimonials of esteem and friendship, innumerable presents pour in: lace bodies and caps adorned with satins and ribbons are deemed solid proofs of the affection cherished by relations and friends; but we must remember, that it is the mother's first duty to consider the health, and not the appearance of her beloved infant, nor the punctilios or etiquette of custom, and to dispense with all those paraphernalia, which are not requisite. The greatest beauty in an infant, in my opinion, is health and strength; and although mothers may be determined to show them off at a christening with fine caps and long lace frocks, they must not forget, it is of the first importance to keep the head of an infant cool, and the feet warm. Lace caps have generally large bows of ribbons, and are lined with very thick satin; the latter is actually warmer than flannel. It is a received opinion, strange as it may appear, that silk is warmer than flannel. This opinion was deduced from the fact, that the fineness of the texture of silk retarded the exudation of moisture from the pores of the skin, by which the heat was retained in the constitution. I dissuade, therefore, from the use of caps lined with satin or silk. I have no objection to such, in the cold weather; but in the warm, they are highly prejudicial and dangerous. Care should be taken that they are not drawn too tight; but brought neatly over the ears, to prevent the latter sticking out.

The next article of dress is flannel, to be worn next to the skin. A jacket is to be made, a foot and a half in length, and open behind, so that it may not be required to be changed with the little napkins. These are to be worn throughout the year, with a view of guarding the infant from the excessive warmth in the hot weather, and preserving a moisture on the skin: the cold weather will not be felt severely, but warmth will be retained. Children, on the contrary, who do not wear flannel, are always liable to fever; while those who do wear it, are guarded from all changes, such as rain, or sudden storms. In warm weather, I deem one thin frock over the flannel quite sufficient.

For the feet, I recommend the twisted or netted worsted socks as preferable in every respect, since they are elastic; but where they are not procurable, flannel socks will answer. I prefer labaders or pelisses made of silk, stuffed with cotton, in the cold weather. These dresses are to be tied with tape: few strings should be attached to them, as it is extremely distressing to infants, and annoys them exceedingly to be turned often in the act of tying. Pins are not to be used on any account; they might occasion many very serious accidents, too often from the carelessness with which they are used.

The undermentioned articles will be necessary for a young mother to have in readiness. Fifty goodries, made as follows: Dhoosootee, a thick coarse cloth, which is to be doubled six times, and sewn together, crossed and recrossed: the dimensions are to be one foot and a half broad, and two feet and a half long. A dimity cover is then made, with white fringe all round, to receive the above, on which the child is laid when placed in the nurse's arms; and two or three of them are to be put under the infant when in bed, to prevent the wetting of the mattress, &c. 60 napkins will be in requisition, to be made of old, fine linen: I mention old linen, because it is much softer than new. The following are the other articles required.

1 dozen of frocks.
1 dozen of night shifts.

½ dozen of flannels.
1 dozen of caps.
1 dozen of sheets.

A bathing tub, to be about three and a half feet in length, one and a half in height, and two and a half in breadth; and a cot, four feet in length, and three in breadth.

My being thus particular in these minute points, I am aware, will occasion experienced mothers to smile; but these particulars are not for their information, but for young ladies who are probably at some out station, by themselves, without any adviser, and without any instruction.

Previously to the birth, hot water and a bathing-tub is to be ready in the room. A basket, containing three caps, three frocks, three flannels, four goodries, four napkins, a sponge, a box with puff and hair powder, is to be placed on the table. Castor oil, tea-spoons, cup and saucer, are to be in readiness. By being well prepared with every thing at hand, all noise and confusion are prevented, and attention given to the circumstances of the case, much to the ease, comfort, and wellbeing of the patient.

It is customary with nurses, after the navel-string is cut, to put a little of the cinders of burnt rags over it. This is very proper; the virtue of this remedy consists in what is called carbon or charcoal, an admirable preventive to any uncleanly sore, and consequently a little fine, powdered charcoal would do as well; not so, however, in the nurse's opinion: and as it would distress her greatly to dispense with so ancient and valuable a custom, she may in this harmlessness be indulged.

SECTION XII.

Management of the Infant first Month after Birth.

I am unacquainted with any work which alludes to the management of a child at this early period of life; and perhaps, in Britain, where there are such excellent nurses, a disquisition on this subject might be deemed unnecessary, as a young married lady is probably surrounded by all her own or her husband's relations: and allowing

there were no good nurse to be procured, her own mother, or her husband's, would in all probability be present. In short, this is an invariable custom, as much is thought of a first child in Europe; sometimes a little too much: indeed, the lying-in room is often crowded with female friends and relations, and the medical man put to great inconvenience and trouble. Idle talk and busy interference ensue; and the poor lady is much worried with such remarks as the following: "My love! keep up your spirits—it is nothing at all, I assure you! You are very pale—I hope you do not feel unwell, my love?" Another will remark: "Oh! that is nothing, it is merely a little weakness.—Dear Sir! do you not think a little wine would be advisable? Come, my child, how do you feel now?" While the spirits of the patient are thus depressed by remarks like the foregoing, a third will urge the necessity of a fire in the room, or open doors: and it is not unusual for a lady, when closing her morning visit, as she is about quitting the room, to cast back a pitiful look, the head languishing over the shoulder—"Be under no alarm, my dear girl, I shall soon be back again:" but returning, with consolation and sympathy depicted in her countenance—"Dear, dear darling, so you were afraid I was leaving you? It will be nothing, will it, Doctor? Pray, Sir, do you not think rubbing the temples with a little vinegar and water would be advisable?" It is but reasonable to conclude, the patient, with all this importance thrown over her situation, already feels herself about to suffer some imminent trial, by which her life is at stake; but whatever may have been the excitement, another relation, perhaps late in her visit of enquiry, will hasten into the room, almost breathless, enquiring, "Is it over?—is it over?—is the danger past?—is the dear girl safe?—is the infant alive?" Interrogation upon interrogation like these follow upon one another, until a bystander remonstrates, by imperatively whispering, "Hush, hush!" This, perhaps, having the desired effect, the last visitor will make one hundred enquiries, give as many recommendations and repeated injunctions, concluding with, "Well, Doctor, I do not think a little hot brandy and wa-

ter, with spices, would do harm, or any other cordial you may think proper, as it is invariably my custom to take these things; and you know, Mr. Doctor, experience is a good rule to go by; indeed, a little something warm to the stomach takes off that nasty faintness and alarm." The last important news being in all probability accompanied with a very significant wink of the eye.

All these enquiries, anxieties, and needless recommendations, although expressed with the very best intentions, tend to depress and alarm the mind of a lady about to be confined with her first infant, when there is no occasion for alarm whatever. Although, in India, the lying-in room is not so much beset, yet where there are many friends, a great number will be in attendance: this must be discountenanced; indeed, no one ought to be present but the accoucher and nurse, when all will go on right, and the patient spared needless alarm and annoyance.

We will now suppose that the child is born. It is immediately to be washed gently with a soaped sponge in warm water. This being done, it is then to be wiped quite dry; hair powder between the armpits, the legs, neck, bend of the elbows and knees, is to be applied with the hand or a puff; then the child is to be dressed. It is customary with midwives, when they deliver ladies, not to dress the babe until the afterbirth is brought away, as they would not, for the world, let go the navel-string, lest the afterbirth should go up into the stomach. All the time, therefore, they are waiting for this event, the poor dear little infant is kicking and screaming on account of the uncomfortable state in which it is allowed to remain; whereas it ought to be washed and dressed immediately. I can assure my readers, that there is no danger of the afterbirth receding to a place into which there is no admission, nor is there any fear of the womb contracting. I have waited nine hours before the afterbirth has been brought away without difficulty, in cases where the separation was not expected in the ordinary way.

Having settled these primary measures, take a teaspoonful of castor oil, and one of hot water, with a very little powdered sugar-candy, and mix them well toge-

ther by beating up, until they have the appearance of milk; give the whole of this to the infant: when done, put it by the mother. In two hours from the administration of this aperient, a thick, sticky matter, quite black, will be passed; and in ten after this, if the child has had no nourishment, it will begin to cry very heartily; on which two or three tea-spoonfuls of the beverage may be given.

On the second and on the third day, the castor oil is to be repeated, as the bowels must be cleansed. This is of so much importance, that should it be overlooked, it is most probable that they will never be right afterwards: but if, on the contrary, they are well purged the first three days, as I have directed, all will without doubt go on well, and the alvine dejection become of a healthy consistence and character. I had a child a short time ago under my charge, whose bowels I could not in any possible way bring into a healthy state. The mother informed me, that his dejections had been bad from his birth; and on further enquiry, I found his bowels had not been well purged the first, second, and third day after his birth: "Oh!" was the reply, "nothing at all was given: I trusted to the milk to do that office." It is true that the milk effects much, being very opening; but in India, it avails nothing without the assistance of oil. In England, nurses recommend and always give sweet oil; but it will not do in this country, castor oil being the requisite, and indeed indispensable medicine.

The aforesaid beverage must be given as before directed, on the morning of the third day, when in all probability the mother will have milk sufficient to render her infant independent of other nourishment.

The child must never be permitted to go beyond two days without the bowels being moved. If they are not, castor oil is to be given as before, or an injection. I deem a strict adherence to this recommendation of the utmost importance, in respect to preventive measures. It will spare the child the inconvenience of fulness about the stomach, and not unfrequently the intervention of griping pains, as well as bring the bowels eventually to act of themselves.

The infant is to be bathed every morning, in the hot weather, in cold water. Parents will object to this, I have no doubt, lest the child should take cold; but I can assure them, that this indisposition results too often from tediousness in washing a child, which renders it liable to colds and fevers. Their procedure is thus: they first take the infant in the lap; then with a soaped sponge wash the head with soap; then they apply the water; next they wipe dry with a towel; keeping the poor babe a very long time under this dilatory process: then comes the legs, the arms, and lastly the body; all of which occupies a considerable period, during which the infant is screaming from painful handling.

The best plan in dressing a child is as follows: The head is not to be washed with soap, but gently with the hand, when the child is in the bath. The rough rubbing which some poor children's heads get from nurses and parents is replete with danger, as well as that improper system some adopt of modelling the heads of infants immediately after birth, which is ordinarily accomplished by hard pressing with the hands. They are not aware, perhaps, that the least pressure on the brain causes instant death. The ears, and behind the ears, are simply to be washed with soap, otherwise they will generate dirt and sores: then a soaped sponge over the body and legs, and well between the legs and groins. All this may be done in two minutes. Then dip the child in the tub of cold water, washing it with the hand. When the child is taken out of the tub, wrap it in a sheet, apply hair powder between the legs, &c. then dress, and all is finished. I am prepared to meet many opponents to the cold immersion; but I speak from experience. My own dear infant I have daily bathed in cold water since he was six weeks old; and the delight, as well as refreshment which he seemed to experience from his cold bath was inexpressible. It preserved a cool temperature on the skin the whole day, and acted as a tonic; but the tepid bath had quite the opposite effects.

The first month of an infant may be called a life of sleep, particularly the first four or five days. The fa-

culty of hearing is scarcely perfect, so that amidst the loudest noise the babe sleeps soundly, sometimes for twelve hours together. This is to be encouraged; for Nature is performing a wise purpose, in gradually bringing all the faculties, especially vision, into operation. This is a period when the functions of the body are becoming perfect, and exhibit to the observer their co-operation with one another in completing the design of their creation. Mothers often become alarmed at the custom which infants have of gaping; but it is the nervous system displaying its first signs of action: and the constant hiccuping is equally alarming; but it is a similar effect, and prevails with all babes shortly after birth.

The nipples of nurses become sore andt ender on the first for and five days, from the hard tugging of the infant. A little fresh butter is the only application requisite, and speedily affords relief.

Infants should not be confined in a close room, but exposed in one freely filled with air. The period is not long gone by, when the exclusion of air, by shutting up every door and window of a house, was deemed indispensable to preserve health; but now it is too well established to need any forcible argument from me, to show that air and a free circulation of it, is a certain medium of promoting health; and that the exclusion of this pabulum of life is replete with cause of sickness.

In hot weather, children ought to sleep and live under a large punkah night and day: small hand punkahs are decidedly dangerous, as they only cool one part of the body, their motion not being well regulated; for sometimes the servants pull them quickly, and then slowly: this is not the case with a large punkah; it is one regular swing, and should be used the second day after the birth of a child. Many will object against this advice; but I beg to observe, that I am speaking from experience. Infants will not sleep when it is excessively warm, their temperature being warmer than that of adults. I therefore consider a large punkah in the hot weather to be indispensable, to guard against irritability and disease. It is to be understood, that the motion of the punkah

at this early period should be exceedingly gentle, and to be progressively increased, until the baneful effects of oppressive heat are thereby prevented.

We must next avoid damp rooms or a foggy atmosphere, as many of the diseases of infants arise from moisture: and I call the attention of mothers to watch the child's *ayah*, to look at the infant frequently, to ascertain if the bed be wet; as native servants, unless narrowly looked after, will allow a child to sleep all night in a wet bed. Such neglect is decidedly prejudicial. The motherdoing this herself in the night time, however, has its objections, as she, being a nurse, ought to obtain all the sleep she can at that period: the other parent will doubtless see the expediency of performing this office, and occasionally see that the native servants do their duty. This countryis most unfortunate for female servants: besides being extremely negligent, they sleep generally with their heads bound all over, so that they seldom hear when the infant awakes; and the poor little babe will be kicking and crying for help, without avail, unless one of the parents send or afford assistance. It is to be hoped, that now, under the divine blessing, faithful servants will be raised up among the native females, who are under Christian education, through the highly honourable and praiseworthy exertions of ladies in India, whose benevolent conduct sets a bright example to their sex all over the world; and we must look to these institutions for Christian servants, who possess the fear of God, without which none can be trustworthy, or be actuated by those affectionate feelings towards little babes which this religious sentiment inspires.

It will now be necessary to advert to what are not unusually thought very minor considerations in the management of infants: indeed, so erroneously is the management conducted in India, that I am decidedly of opinion a new system is indispensably necessary for our eastern nursery. I shall first allude to a strange custom which obtains, with a view of amusing children. The tedium on a child of 12 hours within doors, I confess, requires some judgment to enliven by modes of recreation and change; but I can assure parents, their plans of beating

drums, clamorous songs, and clapping of hands, is a most erroneous system; in fact, any great noise is prejudicial: amusements can be pursued with quietness, and more effectually. A toy in an infant's hand, or a biscuit, has the effect desired. A little carriage rolled along the nursery, and teaching the child to crawl, will agreeably occupy much of the time, and may be carried on quite peaceably, and at the same time strengthen the limbs and promote health.

In the hot winds, in the province of Hindoostan, it is not unusual for nurses to sit in the direction of a line of doors, through which powerful currents of air from the tatties are passing. This must be forbidden, the centre of the room being quite cool enough, in which situation there is no fear of the child experiencing the effects which result from drafts of wind.

Before I quit this subject, it may be important to state when a child ought to leave the nursery after birth. I recommend the first exposure to be made in the verandah, on the third day; and after a lapse of seven or eight, the infant may be safely taken into the open air; but conveyed to those spots only where the country is open, and the air pure, being unimpregnated with vapours ascending from stagnant tanks or smoky huts: the effect of such fumes must be evidently deleterious. The spot most to be desired is an open garden, distant from dusty roads, secure against accidents from runaway horses, and from thoroughfares for carriages and buggies.

I am decidedly averse to the system of bullock carts which are in ordinary use. I prefer the arms of a servant, and if the child is old enough, its own running about or walking. The former system cramps children's limbs; the latter gives impetus to the circulation of the blood, and strengthens them.

The mode by which European nurses carry children is also, in my opinion, objectionable, from a similar effect of cramping the limbs; whereas the stride across the hips in use by the natives, not only extends the limbs, but throws back the chest and shoulders, and is both an easy position for the nurse, as well as for the child. It will be expedient

to give strict injunctions to the servants, however, never to seat the child on the cold ground: it is their prevailing custom so to do, by which the infant is subject not only to the bites of venomous reptiles, but to bowel disease. Great precaution is to be observed, that children are not allowed to pat every strange dog and pariah they meet. In short, these animals ought to be excluded from the compound, and servants forbidden to go to places where dogs are, and desired invariably to get out of their way. I was called to see a fine little boy the other day, whose servant permitted him to throw a stone at a pariah. The dog in revenge, flew upon the child, seized him in the cheek with his teeth: the fangs of one nearly penetrated into the mouth. These accidents, whether the dog be mad or not, are distressingly painful to the parents; but in the above instance, the dog was actually mad, and the child had every prominent symptom of hydrophobia, falling into the strongest convulsions at the sight of water. The paroxysms were more especially increased on swallowing his spittle. It pleased God, in his great mercy, to limit the dear little boy's sufferings to a very short period from the accession of the disease; otherwise, it was one of the most awful cases of hydrophobia I ever witnessed.

SECTION XIII.

Second, third, fourth, fifth, and sixth Months after Birth.

IT is to be impressed upon the mind of the nurse, that acid, when taken in her food, is likely to excite various diseases in the child; that consequent upon such indulgence, not only will the milk curdle, which will appear in the child's dejections, but the effect of such acid induces violent spasmodic pains, and the infant will express its agonies by screams and restlessness. If, however, in spite of all precautions, the mother or nurse should generate acid, and the child's dejections show it by evacuating large curdled lumps, she must occasionally take two tablespoonfuls of magnesia. The following medicine is re-

commended for the nurse, once a month at least, and as often as the bowels call for the aid of purgatives:—

Epsom salts, two ounces; Senna leaves, one drachm; Oil of pepper-mint, three drops: pour on these one pint of boiling water; when cool, strain. One wine-glassfull is to be taken: but should not one dose, however, operate, after the lapse of three hours, repeat it every two, until it has the desired effect. This medicine will not only favourably operate upon the mother, but also upon the infant. About this time, the armpits, groins, folds of the neck, and parts behind the ears, are apt to chafe, and to discharge matter, which, if not closely watched, become angry sores*; as well as in the corrugation of the groin, great and angry excoriations arise, from the carelessness of servants, who do not wash children after they wet themselves, but allow the napkins to remain on some time, which is exceedingly pernicious.

When children advance into the second month, they lose the thick, yellowish tinge of countenance, which, during the first, is almost a dark red, becoming gradually of a yellowish appearance. Babes consequently look beautifully fair, and parents are generally quite enraptured, endeavouring to add art to that beauty which is the dress of nature; and we perceive ordinarily, on this pleasing change, an extra smart bow of ribbon pinned on the cap. But let me repeat, in this place, the great impropriety of using pins in infants' dresses: a child cannot cry out, and exclaim that a pin is pricking it. Dr. Underwood states an instance of his having been informed by a lady, that one of her children, after long and incessant crying, fell into strong convulsions, which her physician was at a loss to account for: nor was the cause discovered till after death, when on the cap being taken off, which had not been changed on account of its illness, a small pin was discovered sticking up in the scull, which had gone into the brain.

It is customary, about the second month, for children to be (to use a nursery phrase) "stuffed in the head." It is an apparent cold, through which difficulty of breathing

* For a remedy, vide Part III.

is experienced. This is of no consequence; and all that is requisite is to rub a little butter on each side the nostril, which will remove an agglutinated matter, that lines the inner membrane of the nose. Mothers, however, greatly alarm themselves, on observing, for the first time, this apparent stoppage, and dream of nothing else but the child's suffocation, and will not be appeased until the arrival of the doctor. Sudden transition excites colds in the heads of children, called by some nurses "snuffles," for which the application mentioned above will prove efficacious.

It is now necessary to advert to the number of times, during the day, a child ought to be nursed. Having already mentioned, that nursing is to mothers the most delightful thing imaginable, it is to be expected they will indulge in this pleasing office every hour, lest, as they say, "the poor dear little child should starve." It becomes an imperative duty on them, however, to believe me, when I assert the erroneousness of their conclusions, and assure such ladies, that the plan they pursue is the way children generally experience the deprivation they so much dread. Heedless of the fact, that it takes a certain time for milk to accumulate, they fly to the child immediately after the breasts have been drained; by which, instead of milk, the poor infant only gets a little wind and water. To explain the cause, however, it will be necessary to mention, that the food which nurses take, has first to undergo the course of assimilation in the stomach; then again in the curvature proceeding from that viscus; whence it is taken up in the blood; thence by the glands, and finally formed into milk. This process requires time, and if the proper period is allowed, the milk becomes rich, pure, and nourishing; but the reverse of this may be expected, if the breasts are drawn previously to the completion of that process. As milk requires a certain churning before it can be made into butter, so do the functions of secretion need a due proportion of time to form the milk. I might probably be more explicit, by supposing we were to be drawing the breasts every half hour; in that case, from the limitation given to the

functions alluded to, they would lose the power of secreting, and become dry, which is a very common case. This is the reason why some women make bad nurses.

Having made this point as plain as possible, I must urge it as a matter of the first importance, that during these months, the following stated hours, viz. six o'clock in the morning, nine, twelve, three, six, nine, twelve, and three, being eight times in the twenty-four hours, be the allotted periods for nursing.

About the third or fourth month, (to use the nursery expression,) the child is to be "*put up;*" that is to say, hitherto they have been carried on the arms horizontally on a *goodree*, but now they are to sit up. The raising a child upon the first or second month, which some persons do, is certainly improper: the bones of an infant, during this early period after birth, are not much firmer than cartilage: the spinal marrow is therefore liable to injury by neglect of this precautionary advice. Should the spinal marrow be injured, convulsions, rickets, and many other disorders ensue.

It will be advisable in this place to call the attention of mothers to the insuperable desire some infants have to sleep, and it appears to be a degree of somnolency peculiar to India. I believe it to arise ordinarily from the excess of heat. The effect, however, of too much sleep on the infant constitution, when permitted after it has attained its sixth month, is unequivocally prejudicial: it diminishes vital energy, and induces weight and torpor in the head. That sleep, however, in a healthy state, which spontaneously occurs, ought never to be more in infancy than twice in the course of every diurnal revolution of the sun. The hours most advisable are from 10 A. M. to 12; and then from 7 or 8 P. M. until daylight on the following morning. The effect of this limitation will be both to renew the vital energy, which has been exhausted during the day, and to assist nutrition. As the child advances, however, into its third year, once in the 24 hours will be sufficient, from 8 P. M. to daylight: and thus, alternate repose during the night, and active exercise and playfulness during the day, will lead to a habit which, when

once acquired, will continue immutable through life. When six months old, it should have much exercise, such as being well nursed, which gives an impetus to the circulation, an exercise which adds tone to the stomach, increases the digestive powers, strengthens the limbs, tends to enliven the disposition, and to prevent a heavy, dull, sleepy habit. Special care must be observed, however, that children are not tossed too much, in rooms where punkahs are suspended, as serious accidents may hence occur.

Some native servants lose all power over themselves, from intensity of drowsiness: it is necessary, therefore, to warn parents of the danger of having dull and sleepy *ayahs* for their children. I was informed of an instance of a lady in this country, who lost a fine child from the neglect of such a servant: who having taken the infant in her arms to put it to sleep by walking up and down the room, during the middle of the night, a degree of somnolency affected her, during which the child fell from her, and was killed by the fall.

I conclude this section with the remark, that as I recommend all children to be weaned on the ninth month, it will be requisite, on the commencement of the seventh, to feed. The subject of the nature of food requiring a long section, I shall give one solely to it: but I here beg leave to mention the various customs of mothers in India, respecting the period when they commence feeding their infants. Some recommend the first or second day after birth, others the second, the third, and the fourth month. Their belief in the expediency of feeding thus early arises from a feeling of apprehension, that in the event of the indisposition of the nurse, it would prove impossible to induce a child suddenly to take to food, and the infant would thus be deprived of the means of subsistence. But on what grounds such erroneous deductions are founded, I cannot imagine. How is it, permit me to enquire, that a child sometimes remains four days after birth, before it obtains the mother's milk, without seeming to be in danger? Is it not because the child can be fed by the spoon, or false nipple? If so, then, what danger can possibly exist when it

grows older, and the means of deglutition become more perfect? Mothers may rest assured, that there is not the least: if the nurse be sick, the child will always take to the barley, which I have before recommended, and unquestionably thrive. I have no hesitation in declaring that the fear is groundless; and strongly urge, that nothing be given but the mother's milk until the end of six months. In case, however, of a want of milk after the third, let the rules for diet be adopted, which I have laid down for mothers, who, from great delicacy of constitution, experience this deficiency. To the child, in this case, one large wine glass of the barley preparation, four times during the twenty-four hours, will be found to succeed very well, until the commencement of the seventh month, when a new arrangement respecting feeding is to be followed.

Let it be understood, in conclusion of this section, that on the fifth month the child's stated hours of receiving milk are to be altered; as the milk, about that period, becomes much richer, and the infant being stronger, will take a large quantity at a time; in short, drain the breasts, so that five hours will elapse before the milk is again duly prepared.

On the last day of the fourth, and first of the fifth month, therefore, the child is to commence as follows: eight o'clock in the morning, one at noon, six and twelve at night, and five in the morning, being five times in the four and twenty hours.

Section XIV.

On Feeding and Food.

Various are the opinions of mothers and nurses on this most difficult and important subject. Some will recommend sago as the most invaluable of all articles for children; while by others it is denounced as a downright poison. Many advance, that nothing is so nutritive as arrow-root: others are found, however, disclaiming against it, declaring it to be the cause of numerous deaths among

infants. Some enlarge on biscuit pap, upholding it as the most ancient custom of feeding; while by others it is viewed as the means of generating worms. Chicken soup and cow's milk are lauded, as bearing the most probable affinity to the human milk; but innumerable adversaries will be found to this system, considering it to be one which lays the foundation of acid. Many descant on the extraordinary nutrition to be found in Salep misree, and as many deprecate it as unnatural and clogging. Enquiries are made whether Tapioca, and concentrated barley, are not the most simple and efficacious? while their astonishment "at such an idea" is expressed by many. Indeed, I might enlarge on the innumerable opinions which have been advanced *pro* and *con*. How difficult is it, therefore, for a mother to pursue any steady system, without having all the friends about her, with their particular recommendations. "O my love, desist, I beseech you, from giving the dear infant such poisonous stuff." "My dear Mrs. So and So, if you pursue your present system, you will lose your infant. Never mind about the doctors' opinion; they are ignorant of what is necessary for a child in the way of food; they only comprehend how to treat a child when it is ill. Never any thing so erroneous! quite shocking! the poor thing will be starved:" and a thousand such expressions flow from various lips, all differing from each other. Should the mother not be well fortified against such attacks, but follow every advice she hears, it is almost certain that her poor child will fall a sacrifice. If, however, such is the difference among nurses, such likewise is the case among medical men; so that, in this confluence of various opinions, a babe has a mighty struggle before it enters the second year of its age, a period when any food will answer, and is acceptable. My anxiety on this subject, therefore, has been great; and that we may all come to one opinion, I shall lay before my fair readers a great deal of research, to show them how earnest I have been in my desire to be the infant's friend at this critical period of life. All subjects beneficial to man, have occupied the minds of men of science, and I am glad to say, this has not been

neglected: we therefore find the most eminent of the profession pursuing every chemical and other experiment, to ascertain the most proper and nutritive food for children, when weaned from the breast.

SECTION XV.

Milk.

Milk from animals seemed the most natural, but then it agreed with so few children, that it became necessary to ascertain by experiment, what milk bore the greatest resemblance to that of human, as well as to determine by actual experience and practical knowledge, what was generally the most suitable. It is a singular fact, and known to all nurses, that in the dejections of children, little white lumps like curds are detected; and when these abound, diseases are produced. Dr. Rutty, therefore, set about several experiments, respecting the properties and nature of this curd; and to ascertain the true properties of breast milk. Dr. Clarke, of Dublin, did so also, together with Professor Young; and it was ascertained and confirmed by Mr. Navier and Dr. Ferries, as well as lately by Dr. Underwood, that human milk contains but a small portion of true curd. Human milk was found, though very thin, to be exceedingly nutricious, owing to the great proportion of the fat, or buttery part, and to a saccharine whey with which it abounds; and it was ascertained, from experience, to be of easy digestion, owing to the small quantity of this curd, with which other milk abounds. The fat and buttery part here alluded to, no animal milk contains in the same proportion; and the cream of human milk is also deemed much more in proportion, than that which is procured from the milk of the cow, &c. The experiment led to a very important conclusion: that an artificial separation took place by different kinds of acids, which served to account for the symptoms of acidity, and the rancid and acid matter so prevalent in infants. Dr. Young discovered, that the

curd of human milk separated spontaneously; and Dr. Underwood ascertained a very important fact, that neither runnets, acids, nor spirits, separated any sensible quantity of curd within eight and forty hours; and of course a much longer time was necessary for its spontaneous separation. This was not the case with cow's milk, for a separation took place almost immediately. Dr. Clarke also observed, that human milk, out of the body, was slow in running into an acescent state, which is not the case with the cow's milk, the latter becoming almost immediately acescent. The experiment is valuable, as it affords strong presumptive evidence, that human milk cannot be so very poor as to run into acidity in the stomach of infants, as some authors have endeavoured to persuade us. It is remarked by Dr. Underwood, that the milk of quadrupeds abounds with cheesy principles; while the human contains a far less proportion. This arrangement shows the wisdom of Providence; because the excess of a cheesy principle must, from the weak state of the stomach of infants, be peculiary noxious to them. It is evident, therefore, by actual experiment, as well as experience, that the disposition to acidity—to form cheese and curd in the milk of quadrupeds—renders that food unfit for children.

But let us pause here, and enquire why we should be so afraid of the curd of milk? It is this. When the curd abounds, it concentrates into large lumps, either clinging to the bowels, forming an acrid acid, or remaining in the stomach, exciting (unless it is vomited up) spasmodic convulsion. I was called to a child, who had taken goat's milk, and who vomited, after great effort, a lump of curd in the shape of a rope, at least an inch and a half in circumference. Had not this expulsion taken place, convulsions most certainly would have ensued. Another lady, in great haste, sent to me a napkin, in which her infant, who had been fed on goat's milk, had vomited an immense lump of this curd, which had nearly caused suffocation. These are circumstances of daily occurrence with those children who are fed with the milk of quadrupeds: it is owing to a disposition in infants to gene-

rate acid in the bowels and stomach, which, meeting with the cow's milk, separates instantly the curd from the watery part, and acts on every thing that comes into the bowels, as acid does in raising and fermenting flour; not only producing green evacuations in infants, but wind, distending their little bowels to the tightness and hardness of a drum, inducing violent griping, and often sudden death. I will not rest this important fact simply on my own assertion; but knowing from experience, that many mothers discredit and disregard this opinion, I beg to offer the sentiments of the most eminent and able physicians who have directed their attention to this important subject.

Dr. Clarke, speaking of acid in an infant, observes: "That such a morbid cause may now and then occur in infancy, as in adult age, from a weakness of the stomach, can admit of no doubt." But Dr. Underwood has declared, that "As breast milk abounds with oil and butter, the viscid matter thrown up often appears more like clotted cream than true curd; nevertheless, either from the milk remaining for an undue time, or from an excess of acidity, or perhaps, other circumstances concerned in digestion, not always known to us, the separation of the component parts becomes sometimes more complete, and true curd appears. How far this may be owing to infants being in an ill state of health, to fever in particular, or simply to weak digestive powers, and a depraved state of the gastric juice, time and attention to these complaints may possibly discover; but at present I am inclined to think, that the gastric juices (which are at all times slightly acid) always possess this property, as they certainly do of separating the curdy parts of cow's milk, if it should happen to stay a sufficient time on the stomach. This we also know to be the case with many adults. Again, that the acid of the stomach is capable of forming proper curd, I have no doubt, having noticed it frequently, and indeed, having now by me, preserved in spirits, a portion above an inch in length, and half an inch in thickness, which was many years ago puked up by an infant I was attending. In regard to the means

by which this acescency may be produced, we know very well, how very small a portion of the prepared calf's stomach is requisite for making sufficient runnet to separate the curd from a large quantity of milk, and communicate acescency to the whey; and is it at all improbable, that the infantile gastric juice, assisted by the natural action of the stomach, by surrounding and mixing with the milk in every point, may operate much more powerfully upon it, and dispose it to become sour and curdy so as to offend that organ, if it should not soon pass into the intestines, which it is presumed, it ought always to do. Moreover, acidity seems to be one of the states into which all animal and vegetable substances naturally, or very frequently run. The bile is weaker in infants, being at the same time a less powerful corrector of acidity."

Dr. George Fordyce was earnest in his labours to establish a similar fact, that acidity in the stomach and bowels was, in innumerable instances, morbidly prevalent. His words are: "The great difficulty, also, of adapting food to infants brought up by hand, as well as the frequent recurrence of all the ordinary symptoms of indigestion, with the relief frequently afforded them by broths, may serve to strengthen the idea of a disposition in the bowels and stomach to generate wind and acidity, in the digestion of their food." I have no hesitation in declaring, that I should prefer soup to milk, from this well known fact of its being free from a substance which coagulates in indigestible lumps. Dr. Underwood is so favourite a writer on the diseases of children, that his sentiments at least will be received with respect. I shall strengthen my position with the following, as unanswerable:—

"It should be remembered," observes this physician, "that it is during the time that infants appear to be affected by a predominant acid in the first passages, that the dejections and vomitings are of a green colour. It has been observed, that all common vegetables, and even bread, are often very imperfectly digested by a dull person with a stomach overcharged with acidity; yet it is no part of such

aliment necessarily converted into any thing like true curd, though the stomach in all such persons, is as certainly offended by the curdling of cow's milk. If the stomach or digestion of infants be naturally weak, why should we not expect to find them peculiarly liable to acidity and its consequences? The state of the stomach being certainly the grand source of general good or bad health, at every age; and, indeed, were I to say no more than that infants, in proportion to the greater weakness of their digestion, must be more disposed to acidity than adults, with many of whom a milk diet always disagrees. To sum up the whole, it may be fairly urged, that in disorders of the first passages, the matter, both by vomiting and stools, is frequently flaky, coagulated, or curdy; that they have a sensible sour smell; and that the stools are often of a green colour, very numerous, and attended with griping pains; that moreover, every kind of aliment, which during its digestion, is alike peculiarly disposed to produce acidity. Breast milk, however, from a healthy nurse, the peculiar food of infants, being less commonly found hurtful to them, because more thin and lighter on the stomach than most other food, and having less of that true curd found in it than in most other milk."

In Baron Van Swieten's Commentaries upon the Aphorisms of the celebrated Boerhaave, are the following appropriate remarks: That "animals that feed on herbs and water, have either an acid, or acescent chyle, and consequently a milk of the same nature; which in our bodies, following its own nature, has all the effects of vegetable nourishment, and produces a viscid matter in the bowels like curd, which is a peculiar kind of viscidity." Bile is the chief stimulant, whereby stools are procured. If it becomes inactive, or is inviscated with the glutinous matter in the bowels, the body must become costive, and then swell. This we see in children labouring under this disease, whose bellies sometimes swell to a monstrous size. The chyle is mixed with the blood in small quantities, and is changed into milk by the powers of the vessels and viscera, and at last is converted into blood. This is

effected by means of the circulation, and chiefly by the action of the lungs. The more exercise is used, the swifter the motion of the humours will be, and of course the assimilation of the aliment will be more speedily and more easily performed: for this reason, infants are subject to diseases arising from acidity, because they have no animal motion." Van Swieten, therefore, premising this acid in children, both of the viscid matter like curds, concludes his observations on the milk of quadrupeds, in the following language: "The blood and serum* are strongly disposed to form concretions. The serum coagulates with a certain degree of heat, but milk does not; but flowing with the blood for twenty-four hours, is changed into serum, and then acquires this power of concreting. This is owing to the action of the vessels on the fluids, and more especially of the lungs. The more remote, therefore, the fluids are from this last degree of perfection, the less power they have to run into concretions. Chyle, for this reason, will hardly yield a coagulum; but milk, which is only chyle that has circulated with the blood for some time, may be separated into cream, whey, and curd, which, when the whey is expressed, becomes cheese; so that the plastic nature of the serum of the blood begins now to shew itself in the milk. Upon eating milk, this colostrum is separated in the stomach and bowels from the other parts, and would fill the intestines with the worst sort of lentor, if it were not separated by the bile: hence the swelled bellies of infants, putrid diarrhœas," &c.

Dr. Cheyne, a very eminent physician, and author of a work on diet, declares, that "the perpetual colics, loosenesses, hard bellies, choakings, wind, and convulsions, which torment half the children of England, are owing to too much milk thrust down their throats by their overlaying mothers and nurses." And according to Dr. Cullen, in most animals that live on vegetables, such as quadrupeds, the milk is acescent; and it is remarked: "Wherever we can examine milk, we always find that it coagu-

* The watery part of the blood.

lates, suffers a decomposition, and becomes acescent." Again, "Infants who feed entirely on milk, are always troubled with eructations, which every body observes are not of the same quality with the food taken; and therefore it appears, that like other food, the milk turns naturally acescent in the stomach." It has been imagined, that a runnet is to be found in the stomach of all animals, which causes coagulation of milk; but according to Dr. Cullen, the coagulation of milk seems to be owing to a weak acid in the stomach.

In conclusion; a Memoir has been published by Parmentier and Dyeat, members of the Royal College of Pharmacy of Paris, on the nature and properties of milk. They first tried the milk of a woman who had been delivered four months, and observed, that after the cream had been separated, the other part appeared of a more perfect white, and that it could not be coagulated, *either by vinegar or mineral acid*, which they attributed to the superabundance of serum. But they found, that in proportion to the age of the milk, it was discovered to be more easily coagulable; and this was confirmed by experiments made upon the milk of twenty nurses*. Its coagulability was not increased by heat. The cream, by agitation, formed a viscid, unctuous matter, but could not be changed into perfect butter.

Thus it is indisputably shown, that the milk from the human breast is freed from those coagulations and curds which are found in other milks. These gentlemen continued their experiments upon this secretion of various animals. It was found that the milk of asses yielded by distillation an insipid liquor, and deposited a liquor similar to the lymph of that of cows. It is coagulated by all the acids, *but not into an uniform mass;* which is an important discovery, as it removes the danger of giving asses' milk, and makes it next to that of human: it however afforded but little cream, which was convertible, but with difficulty, into soft butter, soon becoming rancid. Goats' milk had a thick cream, agreeable to the taste, and preserved itself longer in a sound state; but the scum on its sur-

* This is another reason for weaning within a proper period.

face was easily convertible into *palatable cheese.* It was easier made into *firm butter;* the buttermilk contained a large quantity of *cheesy matter, which readily coagulated.* So that goats' milk was highly prejudicial, cows' much the same; but that of mares, on the contrary, had but a small quantity of *cheesy* matter; nor could the cream be made into butter.

Such have been the zeal and talent which professional men have employed in arriving at a desirable and satisfactory conclusion on this acknowledged important subject. The result of their experiments is this, that nothing can be superior to human milk for children: next to that, the milk of asses and mares is unequivocally the best; but cows', goats', or any other milk, is highly dangerous and prejudicial, on the authority which has now been advanced, which leaves it no longer a question of theory and of doubt.

It is necessary to bring up a child on that food which is nearest to human milk. We are naturally led, therefore, to a consideration of its properties. Its contents partake of three qualities: first, an oily part; second, glutinous, saccharine with salty particles; third, water. The proportions of these qualities are not the same in all women; some milk contains more salt than others, and less sugar: this is not, however, of any great importance, in reference to the properties assuming curdy or cheesy principles, which are so justly dreaded.

There is only, in my opinion, one period when it will be necessary to feed children on milk; and that will be when the mother or nurse, either from bad breasts or sickness, is obliged to wean when the infant is only one, two, three, or four months old. Asses' milk will then be necessary, with which a wine glass of the barley beverage, may be given twice a day. I mention the barley beverage in addition, because asses' milk is very watery and poor, and a nourishment of a more substantial nature is decidedly called for. My readers are sensible of the fact, that the milk of all nurses partakes of the nature of the food, and therefore will not require from me more than to say, it will be expedient to put the ass into a pad-

dock, or inclosure, and not to permit her to stray about, eating filth and dirt, and she must likewise be fed solely on barley. This system is to be continued until the seventh month, when the diet hereafter to be mentioned must be commenced on.

Premising, that the food intended for children contains oil, jelly, sugar, salt, and water, being the properties of human milk, we have next to observe how far the food generally given to children agrees with these properties, and whether it passes freely through the bowels, without being retained to produce acidity. We will first examine sago.

Section XVI.

Sago.

This is obtained and brought from the spice and Molucca islands, and is procured in great abundance from what is called, in those courtries, the libby tree, a species of palm. The progress of its vegetation is very slow. At first it is a mere shrub, thick set with thorns, which makes it difficult of approach; but as soon as its stem is once formed, it rises in a short time to the height of 30 feet; is about six feet in circumference, and imperceptibly loses its thorns. Its ligneous bark is about an inch in thickness, and covers a multitude of long fibres, which being interwoven one with another, envelope a mass of a gummy kind of meal. As soon as this tree is ripe, a whitish dust transpires through the pores of the leaves, and adheres to their extremities, which proclaims its maturity. The Malays then cut it down near the root, divide it into several sections, which they split into quarters, and then scoop out the mass of mealy substance, which is enveloped by, and adheres to, the fibres: it is then diluted in pure water, and passed through a straining bag of fine cloth, in order to separate it from the fibres. When this paste has lost part of its moisture by evaporation, the Malays throw it into a kind of earthen vessels of different shapes, where they allow it to dry and harden. We receive it generally in a granular form, with

some of the parts irregularly agglutinated to each other. Indians eat it diluted with water, sometimes baked or boiled, and most probably fresh: in which state, to them, I have no doubt it may be extremely wholesome; but as purchased in India, it is frequently many years in the shops; and although forming a gelatinous substance, it is not particularly nourishing. But from its having lost its purgative quality, which adheres only to new grains, sago clings to the bowels, often generating acidities, and always costiveness; so that calomel and opening medicine are frequently put in requisition to remove the morbid accumulation.

Section XVII.

Arrow-Root

Is the next article which comes under our consideration. That which is generally used is brought from the West Indies. After remaining most probably many years in the London shops, it is exported for India: the same objection consequently is offerd to it as to sago. It is procured from the Marranta Arundinacea, and is called arrow-root, from the custom of Indians extracting from it a virus communicated by their poisoned arrows. It rises to two feet, has broad pointed leaves, small white flowers, and one seed. It is cultivated in gardens and provision grounds, in the West Indies, and the starch is obtained from it by the following process. The roots, when a year old, are dug up, well washed in water, and then beaten in a large deep wooden mortar, to a pulp; this is thrown into a large tub of clean water; the whole is then well stirred, and the fibrous part wrung out by the hands and thrown away. The milky liquor being passed through a hair sieve, or coarse cloth, is suffered to settle, and the clear water drained off. At the bottom of the vessel is a white mass, which is again mixed with clear water, and drained. Lastly, the matter is dried on sheets in the sun, and becomes pure starch. A decoction of the fresh roots is considered a most delight-

ful nourishing drink; but it must surely be self-evident, that the arrow-root procured in India (often counterfeit) cannot be a nourishing food. It is extremely astringent, and requires, when used as food, to be continually purged away with calomel, &c. Arrow-root can be made in this country, and is prepared at Travancore from the root of the Curcuma Augustifolia. This root is procurable in all parts of India in a dried state, under the name of Tikhir. It is brought in white masses, exceedingly hard, which being dissolved in water, settles at the bottom of the pan, and being washed in about fifty waters, until all the dirt is removed, is dried in the sun, and forms the same hard cakes. Many private families in Bengal prepare it; and it is equal, if not considerably better than that procured in England.

Section XVIII.

Salep Misree,

Or, Orchis Masculi. This is to be found in all the bazars in India; and native practitioners consider it a powerful strengthener of the body. They prescribe it in conjunction with mastic, as a powerful tonic. Salep misree, however, is rather more dangerous and unsafe than either of the preceding articles: although glutinous, it is equally objectionable, from being old, and seldom procurable fresh, being brought from the Levant. If, however, it could be procured fresh, I have no doubt but it would be inestimable in proper quantities, from its well known quality of destroying or neutralizing acid. Salep has also the singular property of concealing the taste of salt water, a circumstance which suggested to Dr. Percival the trial of the orchis root as a corrector of acidity, a property which would render it a very useful diet for children; and it was found, by some experiments made by that gentleman, that it retarded the acetous fermentation of milk, and consequently promised to be a good accompaniment of milk porridge, especially in large towns, where cattle, from their peculiar

feeding, yield acescent milk. The manner of curing the orchis root, as recommended by Mr. Moalt of Rochdale, is by washing the fresh root in water; and the fine brown skin which covers it is to be separated by means of a small brush, or by dipping the root in hot water, and rubbing it with a coarse linen cloth. When a sufficient number of roots have been thus cleansed, they are to be spread on a tin plate, and placed in an oven, heated to the usual degree, where they are to remain six, or four minutes, in which time they will have lost their milky whiteness, and acquired a transparency like horn, without any diminution of bulk: being arrived at this state, they are to be removed in order to dry and harden in the air, which will require several days to effect; or by using a very gentle heat, they may be finished in a few hours.

Section XIX.

Tapioca.

The root from which Tapioca is made is the Jatropha Manihot, which is the Cassada plant of the West Indies. It is brought also from South America, where Tapioca is made from Jatropha Janipha. The root of the bitter Cassada is poisonous, when raw; but is entirely deprived of its noxious qualities, which reside in the juices, by heat. It is, however, a dangerous ingredient, unless carefully prepared. Dr. Ainslie, of Madras, has been able to make it from the Maravullie Kullange, which is the Tamool name for it, and Shuftaloo is the Hindoostanee. He took the healthy, full-blown Maravullie Kullange, washed and cleansed it, and having scraped off the outer skin, cut into small pieces (each about the size of a nutmeg) all the fine, white, and delicate parts of the root, taking care to reject the tough, woody, useless, and brownish coloured substance at the heart. He soaked these pieces for ten or twelve hours in cold water, and then dried them on mats in the sun, for a day and a half, or till such time as they broke short and were clear. They were

then pounded into a fine flour, which was next put into an open towel, suspended over boiling water, and closely covered at top by a pan or pot: in this state it was kept till such time as it appeared to be formed into tough, irregular masses, which were hastened by now and then stirring it. These masses were then taken out of the towel, and broken into smaller pieces, and dried in the sun, till they became quite hard and white, and in fact formed into Tapioca. Previously to the Tapioca being dressed for food, Dr. Ainslie found it eligible to bruise or pound it into grains, about the size of peas, by which means it is much more easily boiled. In dressing, it requires the water to be added cold, and which should also be boiled for a considerable time, after which it is fit for use.

Section XX.

Bread and Biscuit Pap.

There is no objection to taking bread by itself; but if mixed either with cows' or goats' milk, it is dangerous from its going into a state of acidity, and generating bowel complaints, or inducing distended bowels. It is to be lamented that it should be prejudicial in India, on account of the feeling in all mothers, both in Europe and India, in its favour; but being so, it would be a dereliction of my duty, were I not to dissuade my friends against its adoption. I am aware, that instances are numerous where children have been reared on milk, sago, arrowroot, salep-misree, and bread and biscuit pap. But let me remark, that my intention in writing this work is not to treat on the cases of those who have escaped danger, but to prevent a recurrence of the many hundred victims who have fallen under improper management; for there are some children (and it frequently runs in a family) who have the most extraordinary digestive powers, in respect to assimilating all description of aliment, and others again who can be reared on (and let me add, no other than) the very best nourishment. I should

consider the person who would urge an opinion contrary to this, to be like him who would say, that because there are healthy people in the world, there were none who are sickly; or that a person in consumption did not require a line of treatment and living different from him who is plethoric and strong; or that the stomach of one did not differ from that of another. And although I consider that the system of human life is not the same in all, yet I have no hesitation in believing, that a system of diet can be arranged, with few exceptions, for the general use of the infant race; but the system must not be that of repletion.

It is, I trust, from the foregoing exposition of the properties of food, established to the satisfaction of my readers, that great danger is likely to arise from milk, sago, arrow-root, salep-misree, &c. ascribable to the great disposition in children to generate acid: let us therefore inquire for a food which is anti-acid, and is neither heating nor astringent. After much revolving in my mind on the possibility of procuring a convenient article of diet of this nature, at length I had the good fortune to observe, that great benefit was derived by patients from barley water; and that pearl barley, in particular, could be boiled down into a fine, rich jelly, evidently possessing the most nutritient qualities.

SECTION XXI.

Barley Meal.

I determined upon making barley meal, because it promised to surpass bread pap, on account of our being able to dispense with milk in the use of it. I therefore procured common barley from the bazar; had the outer skins taken off, and washed in about twenty waters, until the last water became quite clear from all turbidness. The barley was then dried in the sun, and pounded into a coarse meal. Two table spoonfuls of this was boiled in an iron saucepan in two pints of water, till reduced to half a pint, which

quantity was given to a child from eight to ten months old, three times a day: a little salt was added to make it palatable, instead of sugar, as I believe the former greatly assisted the powers of digestion. There are some cases, however, which may be considered an exception, where sugar must be given to induce the child to take this food. The first attempt on this new article of diet was made on a little girl of my own, and I found it answer most admirably. The bowels were invariably kept open by the freshness of the grain, without the aid of medicine; the dejections were preserved of a healthy colour, and free from all appearance of acid. This food was liked by her exceedingly, and would have been more especially so with sugar; but as it was, she preferred it to curry and rice. The latter, which I had made, free from spices and fat, was much relished for the first few days, but subsequently nothing was so liked as the barley meal.

It is customary, I am warranted in observing, on the discovery of any new system of treatment or diet, to laud it as infallible. It is a weakness which possesses the most scientific and able minds, and causes an error too often in that judgment, which in other matters is sound. In short, it is the bias of prejudice, and where is the mind which is not in some degree tinctured with it? I shall strive to be impartial, and go only the length of giving the benefit of my experience; beyond which, I beg leave here to declare, I do not advise. There are exceptions to this, as in other rules and systems. It may require many changes in diet, variations in quantity, &c. before any particular food or proportion can be well adapted to the peculiar state of the stomach, which, as exhibited in some, is quite contrary to the general character of infants. Hence diet must in particular instances depend upon circumstances, and no one fixed rule, applicable to all cases, can be properly laid down. That food is undeniably the best, which keeps the bowels free from green tinges or mucous coverings. The barley indisputably effects this: our time will not, therefore, be mispent if we examine into its true nature.

Hippocrates was one of the first to ascertain the true nature of barley; and as diet was the first and often the only remedy which he, the parent of our art, made use of, it may be justly believed, that his experience must have been sufficient to establish its nourishing virtues. It was his favourite diet, especially in disease; and ever since that date, barley water has been the received beverage for the sick chamber. Hippocrates used it in the form of what he called Ptisan, from *ptisana* of the Greek, to decorticate, bruise, or pound; that is, barley deprived of its husks, or pounded, because formerly the barley was decorticated by pounding, after having been steeped a little in water, and then dried. The ancients prepared it, by first steeping the barley in water till plumped up, afterwards it was dried in the sun, and beat to take off the husks. They next ground it, and having let the flour boil a long time in the water, they again put it out into the sun, and then closely pressed it. It is properly this flour, so prepared, that is called Ptisan.

Wheat, rice, lentils, and other grains, went through the same process; but they gave these ptisans the name of the grain from which they were extracted, as ptisan of lentils, rice, &c. whereas the other they called ptisan, because of the excellency of it. When they wanted to use it, they boiled one part in ten or fifteen waters: when it began to grow plump by boiling, they added a little vinegar, and a very small quantity of anise or leeks, to keep it from offending or filling the stomach with wind. Hippocrates preferred the ptisan to all other food in fever, because it softened and moistened the intestines, and was besides of easy digestion. When consulted in a continued fever, it was customary with him to direct his patient to begin with a ptisan of a pretty thick consistency, and go on, by little and little, lessening the quantity of barley flour, as the height of the distemper approached, so that he did not feed the patient, but with what he called the juice of the ptisan, that is, the ptisan strained, and when it was of a peculiarly thin consistency. With regard to the quantity, he caused the ptisan to be taken twice a day by those who were in health.

To show how medicine, like other sciences, retrogrades, the practical system in the treatment of fever in France, the propounder of which is Broussais, a celebrated leading physician, is at this moment the inculcation of the same doctrine of cure of fever, by the administration of a mucilaginous, saccharine beverage. If such authority is valuable testimony in support of the foregoing strong evidence of the utility of this food, I may add to it my own experience: sincerely do I hope, for the benefit of my little patients, that it may be universally introduced and used.

I find it mentioned, that the inhabitants of the Canary Islands subsist chiefly on Goffio, a mixture of wheat or barley flour toasted, which they mix with a little water, and bring it to the consistence of dough, and then eat it. Sometimes, by way of delicacy, they put the goffio in milk, or dip it in honey, or molasses; in short, one way or other, it is their common food. It is also stated by Sir T. M. Eden, in his account of the state of the poor, that many poor people, particularly in Scotland, live, and that very comfortably, for months together, upon oat and barley meal, mixed with salt and water, with no other variety than the different degrees of thickness and thinness of bread, pottage, flummery, and gruel.

Besides the preceding testimony, we possess that of Dr. Cullen, who gives the following description of farinaceous food, under the article *aliment*, which is very confirmatory of my opinion on the nature of this kind of diet:—"While we thus endeavour," says this physician, "to show that farinaceous substances contain a large proportion of saccharine matter, it is to be observed, that the farinaceous seeds are of all other vegetable matters the most powerful and nourishing to men, as well as to domestic animals; and hence the Farina Alibilis of Dr. Haller. This nutritious quality, he indeed imputes to a mucilaginous or gelatinous matter, which appears in them upon their being diffused in water; and it is possible, that nutritious quality may in part depend upon this; but at the same time, from what we have just now said of the composition of farinaceous matter, it will appear that this vegetable mu-

cilage or gelatina consists, for the most part, of sugar, which therefore may still be the basis of its alimentary part. We allow it, however, to be also probable, that farina consists of another matter, which may be supposed to give the whole its gelatinous appearance in solution, and probably also to render the whole a more proper, complete, and powerful nourishment to the human body. This other ingredient of farina is probably an oil, of that mild and unctuous kind that is got from many farinaceous seeds by expression, and is therefore commonly named by the general title of an expressed oil." Thus, then, in this description, we perceive many of the constituent qualities of human milk in barley; saving this difference, that one is animal, the other vegetable nourishment. Dr. Cullen adds, that "in the species of barley there is some difference, according to the number of seeds in each row of the ears; and hence the Hordeum Distichum, Tetranstichum, and Hexastichum: and this difference in the size and plumpness of the grain, but with no difference of qualities that we can perceive."

"We have observed above, that all the Cerealia*, by their germination, have their saccharine matter evolved, and therefore more readily subjected to a vinous fermentation. This seems to take place more readily, perhaps more fully, in barley than in any other of the Cerealia, and therefore it is the grain from whence very universally our beers and ales are prepared. Barley is employed as a part of diet, both in its unmalted and malted state: the former, however, is almost only employed as a common aliment. I do not know that there is any experiment or observation which shows that barley, in its unmalted state, is a more antiseptic aliment than any other grain: of late, however, we have learned, that in its malted state, its saccharine matter, extracted by infusion in water, and given as a part of diet, proves remarkably antiseptic. A decoction of barley, or as it is called barley water, is a drink employed in many diseases, and it is not unworthy the attention of the physician to direct the proper preparation of it."

* From Ceres, the goddess of corn, being the name Linnæus gives to seeds of wheat, rye, barley, oats, &c.

Dr. Cullen next considers oats, "a farinaceous food used by many people in the northern part of Europe, but which is especially the food of the people of Scotland, and was formerly that of the northern parts of England, countries which have always produced as healthy and vigorous a race of men as any other in Europe. The meal of this grain contains little sweetness, and when a little toasted, rather gives what we call a kernel taste, approaching to that of the *Nuces oleose*. In its sound state, it is entirely without any bitterness, which Spielmann and some writers have alleged to be the case with the bread made of it. It discovers no more acescency than the other farinacea; and when malted, is readily subjected to fermentation, and affords an ale, which, though seldom made strong, is very agreeable, and without any bitterness. The nourishing quality of oats, both with respect to men and brutes, is in this country very well known."

Thus then, as it regards the nutritious qualities of the foregoing farinaceous substances, we have the strong evidence of Dr. Cullen; but he evidently gives the preference to the barley. While he, however, in conjunction with all his countrymen, particularly eulogizes the meal of oats, and I think with great justness, the latter is, in my opinion, better for older stomachs than those of which I am now treating.

We are next to consider that state of the stomach, which, from its natural delicacy, exclusively belongs to infants, and renders necessary a food partly digested by boiling, without losing by this process any of its nutritive qualities. Such is the case in barley; it may be boiled down to a fourth, and this, instead of deteriorating the nutritious qualities, makes it gelatine; so that we entirely, by this food, attain the object desired by Dr. Cullen. "In illustration of this subject," discoursing of the solubility of aliments, "it may be remarked," says this gifted physician, "that in so far as the arts of cookery render the texture of aliments more tender, it renders them in proportion more soluble in the stomach. At entering upon this subject, I should have observed, that we have a par-

ticular proof of the more ready or difficult solubility of different substances in the stomach. There are men who are occasionally, and many who are frequently, liable to a rumination, or the bringing up by an eructation a part of the contents of the stomach. These parts are frequently entire portions of vegetable or animal matter, manifestly of a firmer texture than the rest which had been taken down, and have not, therefore, been so readily dissolved. On account of the rarefied air which they contain, they float near to the upper orifice of the stomach,and are therefore most readily brought up. I have known several persons liable to this rumination; and from them have learned, that certain substances are more commonly brought up than others, and some at a longer time after eating than others, and both circumstances seem clearly to depend upon the different degrees of solubility in these substances."

Our next consideration is, that food, in an unleavened state, has been objected to; but on the same high authority we are told, that that objection is groundless. "However considerable the use of fermented bread may be," observes Dr. Cullen, "the use of unfermented farinacea is still very great and considerable amongst almost every people of the earth." "The whole population of Asia live upon unfermented food; and Dr. Cullen believed the Americans, prior to their becoming acquainted with the Europeans, employed, and the greater part do still employ, their maize in the same condition. Even in Europe, the employment of unfermented bread and farinacea in other shapes, is yet very considerable; and we are ready to maintain, that the morbid consequences of such diet are very seldom observable."

Dr. Cullen adds the following undeniable facts:—"In Scotland, nine tenths of the lower class of people, and that is the greater part of the whole, live upon unfermented bread, and unfermented farinacea in other forms; and at the same time, I am of opinion, that there are not a more healthy people any where to be found. In the course of fifty years that I have practised physic amongst them, I have had occasions to know this; and have hardly met

with a disease of any consequence, that I could impute to the use of unfermented farinacea. Physicians, who represented these as a noxious matter, must at the same time acknowledge, that in every country of Europe, it is often used with perfect impunity. To obviate, however, the conclusion I would draw from this fact, they allege, that it is only safe when used by robust and labouring people; but we give it in this country, not only to the farmers, and labouring servants, but to our sedentary tradesmen, to our women and to our children, and all of the latter live and grow up in good health, except a very few dispeptics, who are not free from complaints, which those also are liable to, who live on fermented wheaten bread. What may happen to children, who from their birth are fed with pap instead of their mothers' milk, I cannot determine; because I have not had occasion to observe such a practice. In this country, our children have hardly any other food except their mothers' milk, for the first five months of their life; but after that period, or perhaps sooner, oat-meal pottage. From all these considerations, it will appear, that a great deal too much has been said of the noxious effects of unfermented farinacea. I have said above, that it would surprise modern physicians to find that Celsus (who like other ancients, can hardly be in the wrong,) should say, that unfermented was more wholesome than fermented bread. I am ready to allow, that he was in the wrong; but I am disposed to suspect, that it happened from his observing that the lower people, who lived on the unfermented, were generally more healthy than those of the better sort, who lived upon fermented bread."

My own belief, that unfermented bread is found harmless, arises from its containing part of the husk of the grain, which has in it a purgative quality, as well as a nutritious principle. I therefore ascribe part of the good effects of the barley meal to a portion of the husk remaining on the seed. I am firm in this conviction, therefore, that brown bread is far more wholesome than white. I trust, after the foregoing evidence, it is not necessary for me to add more on the subject of barley, to prove it to be

the most fit food for children in India. As a child advances, however, into the tenth month, plain curry and rice is a diet I should recommend about the middle of the day, or rice and dhal. The rice ought to be old and well boiled, and the curry made without garlic or rich spices.

Having now I trust enlarged sufficiently on the nature of food, let us attend to the important subject of *quantity*.

SECTION XXII.

The Quantity.

Dr. Cheyne has remarked, that all chronical diseases, and infirmities of old age, and the short periods of the lives of Englishmen, are owing to repletion:— evident, because evacuations of one kind or another, form nine parts out of ten of their remedies: for instance, cupping, bleeding, blistering, issues, purgings, emetics, and sweatings become in continual requisition to drain off accumulated humours. That physician declared, that if any one would lose a pound of blood, let him take an opening medicine, or a sweating one, by dropping one great meal, or abstaining from animal food and strong liquors for four or five days, which would be as effectual as opening a vein, swallowing a dose of pills, or taking a sweating bolus. Ridiculous as it may appear, I remember an officer in this army, who, when he felt himself unwell, invariably refrained from eating for three or four days, which always effectually proved remedial. He told me, it was quite customary in Scotland for his countrymen to pursue the same course, where he learnt it.

Indeed, Dr. Cheyne, who devoted his time to the study of this subject, adds, that if any one desired health and length of days, he must live low, (or maigre, as the French call it.) In Europe, where there is purity and coldness of air, bracing up the fibres and inducing a keen appetite, the digestive functions become much stronger; added to which, persons are industrious and strong: yet it was remarked by the physician before mentioned, with what sprightliness, strength, activity, and freedom

of spirits a low diet, even there, preserved those who had habituated themselves to it.

Buchanan informs us of a person named Laurence, who preserved himself to the age of 140 years by the mere force of temperance and labour. Spotiswood mentions Kentigern, (afterwards called Saint Mongah, or Mongo, from whom the famous well in Wales is named,) who lived to 185 years, although after he arrived at the years of discretion, he never tasted wine or strong drink, and slept invariably on the ground. Henry Jenkins, a fisherman, attained the age of 169 years: his diet was plain and cooling. Parr died sixteen years younger, viz. at the age of 152 years 9 months. His diet was equally low; and his historian adds, that he would have lived much longer, had "he not changed his diet and air, by coming out of a clear, thin, free air, into the thick air of London, and after a constant, plain, and homely country diet, being taken into a splendid family, where he fed high, and drank plentifully of the best liquors." Dr. Lister mentions eight persons in the north of England, the youngest of whom was above a hundred years, and the eldest 140.

Dr. Cheyne restricted the quantity of food sufficient to keep a man of an ordinary stature, following no laborious employment, in health and vigour, to eight ounces of meat, twelve of bread or vegetable food, and about a pint of wine or other generous liquor in 24 hours; but the valetudinary, and those employed in sedentary professions, or intellectual studies, must, according to that physician, take much less; as he who would have a clear head, must have a clean stomach, the neglect of which, being, in his opinion, the cause why we see so many hypochondriacal, melancholy gentlemen among those of the long robe; the only remedy for which, being either to remove the cause by labour or by abstinence.

Dr. Cheyne, in pursuing this inquiry, expresses his surprise at the great age to which many Christians in the east attained, who retired from the persecutions into the desert of Egypt and Arabia, and lived in the finest health on a very little food. Cassion mentions, that the common measure in twenty-four hours

was about twelve ounces, or a pound, with mere water for drink. Saint Andrew lived to 105 years or more, on mere bread and water, adding only a few herbs towards the latter period of his life. James the hermit, to 104; Arsenius, tutor to the Emperor Arcadius, 120, five of which he passed in the desert; Saint Epiphanius to 115; Saint Jerome, to about 100; Simeon Stylites, 109; Romaldes, 120; and Luis Cornaro, a Venetian nobleman, after he had used all other remedies in vain, so that his life was despaired of at 40, yet recovered, and lived, by the mere force of temperance, 100 years.

Thus, then, we have sufficient to shew, that two much food, in grown up persons, is detrimental. How must it therefore be in infants, whose stomachs are exceedingly delicate, and extremely sensible to any load? It must be evident to the good sense of my readers, that stomachs so exquisitely tender to excitement as those of their little offspring, are incapable of digesting a large quantity, as well as that food which is stimulating in quality.

While lamenting one day to a medical gentleman the unhappy custom which mothers pursued in feeding their children too much, he remarked, that during the whole of his long experience, he never once heard of an instance in which a mother had fallen into the mistake of killing a child by starvation, neither has such an instance ever fallen within my knowledge: but how *very very* many have become victims to over feeding! I have often felt the deepest sorrow on account of this melancholy fact, and while I have entreated with all words, with a detail of dangers, and have recounted sacrifices, still the infatuation has continued. Mothers would not forbear, lest the "infant's cries for want of food should drive it into fits;" whereas the cries are most frequently from too much food being already in the stomach, lying heavily, and exciting griping pains.

I have seldom prevailed on mothers to follow my advice on this subject. I have set forth every argument in the most supplicating and persuasive terms in my power; I have remonstrated, in the most determined style of manner and language, on the danger; but yet I lament

to say, not only in one or two instances, but nearly in all, have I been unsuccessful, and thus unfortunate, yielded, abashed and dispirited.

A very eminent practical author has observed, with similar despondency, this general rule of conduct among nurses and mothers, in giving whatever the stomach seems to bear, and as often as it can be received, concluding it to be a very likely means of advancing the growth and vigour of the child; "whereas," says this gentleman, "nothing obstructs pure nourishment more than over glutting the stomach, notwithstanding the shew of some healthy children, who have been permitted the liberty of any thing they could eat, whose condition might have given but little credit to such indulgences, had it not been for a happy constitution." At the very instant of writing this, says this author, "I was sent for to a child a year old, who had a violent humour on both sides of her head, which had existed for nine months. This proceeded from high feeding. The child had been indulged with savoury food, and what with the nurse, and grandmamma, who lived close by, was fed with calf's head, pig, turkey, &c. and frequently had a good sized chicken dressed for dinner; besides these, she was indulged with a large proportion of milk for breakfast; again, at the nurse's breakfast time, tea, with toast and butter; about eleven in the morning some bread and butter, or broth; these with the several feedings between noon and night, may well be supposed to have caused all these ill-humours; and how fortunate it was that it flowed, otherwise the child certainly must have died."

How true is the remark by Dr. Underwood, that "various tribes of the irrational species act in a thousand instances more prudently than we do, and being uniformly guided by instinct, are led implicitly and safely through all their operations. Many quadrupeds, fish, and even reptiles, know what is proper for them, as soon as they come into existence, and have strength sufficient to search after it: in other cases, there are instances where they are guided by the parent, who seems to adjoin some degree of knowledge acquired by experience to the instinct with

which it is naturally endowed. Man, on the contrary, designed to be the pupil of observation, has scarce any innate discernment, and consequently his infant race pass through a long period, utterly helpless, alike divested of ideas to guide, and of strength to manage for themselves. But to the parent is imparted both, whose province it is to judge for them, and actually to put into their hands and mouths, whatsoever they stand in need of. When the parent, therefore, forsakes the paths of simplicity, and lays down arbitrary rules, the result of false science, instead of patient experience, or mistakes the clamour of fashion for the voice of nature, confusion and disease must be the unavoidable consequence." "It would be well," observes this physician, "that all who are entrusted with the management of children should have more just ideas of the manner in which we are nourished; and especially, that it is not only from the great quantity, nor from the quality, of the food, abstractedly considered. They may surely be led to conceive, that our nourishment arises from the use the stomach makes of the food it receives, which is to pass through such a change in digestion, as renders it balsamic, and fit to renew the mass of blood which is daily wasted and consumed. An improper kind, or too great a quantity at a time, or too hastily before the stomach has duly disposed of its former contents, prevents this work of digestion, and, by making bad juices, weakens instead of strengthens the habits, and in the end produces worms, convulsions, rickets, scrophula, slow fevers, purging, and fatal wasting away." Thus having enlarged sufficiently, I trust, on the nature, as well as the quantity of food, I conclude this article with succinctly stating the plan, which I propose to adopt for our Indian nurseries.

Milk, therefore, from the mother's breast, must be given for the first six months, without the aid of any other milk or food whatever. In event of a want of milk, from debility of constitution in the mother, or any other cause, I propose that ass's milk be added, viz. two ounces in the morning, two at noon, and two at night; a little finely pounded biscuit may be mixed with it, or barley water. This

should be given out of a sucking pot, made of glass, which at the end has a mouth like a nipple ; over this is placed a piece of sponge, and on this a piece of fine kid-leather glove; great care must be taken that the whole of this apparatus be kept clean, that is, the glass and leather; if not, they will generate acid.

If a mother have sufficient milk to enable her to suckle her child wholly for the first three months, I see not any necessity for commencing with the ass's milk; but recommend, if food become necessary, the barley water as before stated. At ten months, I consider the child of course weaned; I then recommend a small cupful of barley meal for breakfast, at eight o'clock ; at one, Dhal and rice ; and in the evening, the barley beverage as before: the former is a delightful food, and children are generally exceedingly fond of it. It has a peculiarly fine effect in keeping the bowels regular, and as far as I can judge, is peculiarly fitted for digestion.

For drink, nothing can be preferable to the barley water: it is the most innocent, and less likely to do injury, to generate acid or ill humours; but some children will not take this beverage: in this case I recommend lemon grass tea made very weak, with a little sugar, and one desert spoonful of milk, to one ounce and a half of the tea. Lemon grass is called in Hindoostanee, Genbel. It is a delightful, wholesome beverage. Dhal is called Moong, in Hindoostanee, meaning the pigeon pea. It is an excellent species of pulse. It should be well boiled in water, and of a thin consistence, so that when mixed with the rice, and blended together, they may not be too thick. I am a great advocate for children at this age beginning to eat biscuit and bread; as eating such things, tends to accustom them to masticate, and consequently increase the quantity of saliva, which is indispensable in promoting digestion.

When a child has passed the twelfth month, curry and rice may be given occasionally. It must, however, be free from garlic and spices; be simply made of chicken, coloured with a little turmeric: onion and coriander seed may be added, to give it flavour. The subject of food, dur-

ing the indisposition of teething, will be attended to under diseases of children. I shall now proceed on the method to be adopted in weaning.

SECTION XXIII.

Weaning.

It will be necessary, on the seventh month, to prepare the child for its new diet,—an office which is extremely agreeable to mothers; for if any thing will excite a smile, and joyful heart, it will be the commencement of that office, of feeding an infant. The little mouth is all anxiety, and the delighted parents, who love their babes, are in extacy in witnessing the first efforts to satisfy the demands of hunger. The infant is often most eager; yet the mother is no less so to give than the child is to receive. This is usually the case, but not invariably; for with some, great coaxing and patience are requisite.

We must begin on the first day of the seventh month with four tea-spoonfuls of barley beverage in the morning, and the same in the evening. This is to be gradually increased during this month, until an ordinary sized wine-glassful be taken night and morning. On the eighth month, a new rule is to be pursued; and with this change, a very material difference is perceived on the mother's countenance.

We must now lessen the quantity of milk: it is to be given only at five in the morning, and at nine in the evening. I am prepared for many objections from my friends to this advice. How many can I imagine saying, "This is indeed foolish, quite nonsensical; my children never experienced the least inconvenience from weaning: it is distressing enough to wean at the day usually appointed, without the exceedingly painful probation of this deprivation of the pleasure of nursing, a month before this trying event!" But let me assure my good readers, that if the comfort of their dear children hold paramount consideration in their hearts, they will embrace this advice. Some children, it is very true, wean easily;

others again do not, but gradually pine away until they never recover*. It is solely and wholly on this account, that I recommend all children being weaned on the ninth month; for after that period, the intellectual faculties open, and it is astonishing to observe how exceedingly cunning and sagacious they become; so that it is a truly painful separation to the poor little sufferer, being torn suddenly from its mother's breast, at a period too, when the mind has been capable of indulging in the delight and sweets of nursing. After the ninth month, also, the weaning becomes more painful to the mother. All the little tricks, playful smiles and caresses, which take place on the lap, when a child passes the ninth month, lead mothers into absolute idolatry, so that the cleaving between the two is such, that the separation becomes a trial indeed.

In urging the necessity of weaning children at this stated period, I beg leave to be undersood, that here, as in all other rules, there are exceptions. I would not recommend the weaning of children, for instance, during a period when the parents are unsettled in regard to residence, such as marching, or being about to move from one spot to another, or in cases when infants have some organic disease, or are weak and irritable, or indeed where *very difficult dentition is threatened;* but I hold it indispensable to wean children on the ninth month, where health prevails, and when the parents are settled.

During the eighth month, therefore, the barley beverage should be increased to three wine glasses in the course of the day, and the milk limited to twice in the 24 hours, viz. in the morning and evening. The barley must be made, however, of meal. On the first day of the ninth month, the milk to be restricted to the night only: the barley three times a day, and in small cupfuls, will be expedient, in consequence of the change. This may be continued until the first day of the tenth month, when the child is to be weaned, and the barley is to be given morning, and at night, with the Dhal and

* Vide last Section, Part IV.

rice as before directed. In the day time the Dhal may be made like curry, which is often preferred in that shape.

Should thirst be felt, barley water or lemon-grass tea may be given, but nothing during the night. Many mothers will declare, that a child will die of thirst, if it have no drink during the night. But I may enquire, how is it that grown persons, who need more moisture than infants, do not require any thing to drink at night? If a child indeed be fed at that hour, or permitted to drink, habit is so arbitrary, that it will awake ever after at a particular hour, which is a very great inconvenience, as it not only breaks the child's rest, but gives very unnecessary trouble to parents and servants, and is, I believe, injurious to the health of the child.

Section XXIV.

To dry up the Milk.

It is important to know how to do this, as many serious accidents occur from ignorance on the subject. I once attended a lady who had suffered much scarification in the breast from neglect of proper treatment. Her breast was filled with deep sinuses or holes, which discharged an immense quantity of matter. To prevent accidents of this kind, I recommend a glass like a tobacco pipe, the mouth of which is put on the nipple, and at the end of the tube a person sucks in the milk. By drawing the breast once a day, the milk gradually diminishes, till it is wholly reduced.

The senna and salt mixture must also be taken every morning, and the diet be low; that is to say, no wine or beer, and as little animal food as possible. Indeed the beer and diet is to be gradually decreased, when the mother's milk will begin to diminish: and it is here worthy of remark, that the method which I have recommended, of weaning a child progressively, is with the view that the milk may gradually leave the mother. She will find these rules to be of great advantage to herself; and on the whole, I think my advice will be

generally followed, when the benefits which accrue are known; for when we consider the climate of India, and the many causes of exhaustion, we must naturally conclude, that the constitution of that mother who suckles her child only nine months, is not in so much danger of being impaired, as that of her who nurses from twelve to fifteen months. Indeed, I have known some instances of nursing during eighteen months, on which account, many a husband has been deprived, by the ruined constitution, or death, of his beloved partner, of his almost only consolation and comfort in this land of exile.

We daily witness ladies proceeding to the Cape and Europe, solely on account of extreme debility, occasioned, very generally, by the habit here mentioned. Did the child suffer from this early weaning, I might be justly blamed for recommending the mode which I have done; but on the contrary, I fully believe the gain is equally great to the child; from it being a remarkable fact, that children are far more forward in walking, talking, and eating, when brought up by hand, than when nursed to a late period.

Section XXV.

On Purgatives.

I shall conclude the first part of this work with a recommendation of the medicine* necessary to preserve children free from the ravages of sickness; inasmuch as purgatives are concerned, this, all will acknowledge, is a very important matter for consideration. I remember a professor observed, that the best physician was not one who could cure only, but who could prevent a complaint; and that surgeon was not deemed the best, on account of his taking off a limb, but he who could save one. A pilot may take a ship upon a shoal, for instance, and from his good seamanship get her off again; but he is the best pilot who will keep a good look out, and guard against shoals.

* This section merely alludes to purgatives as preventive. The subject of prevention of disease is more fully treated on in the last part of the work.

The former may obtain a name and character for saving the ship from going to pieces, while the latter, never having brought his into danger, does not attract notice or public attention : but the vessel belonging to the latter is safe and sound, while that of the former is so shaken and shattered, that she never weathers a storm again.

So it is with the human constitution. The medical man who will display his talent by permitting patients to produce, and himself to cure disease, will obtain a name of much eminence, surpassing his, whose object is to guard against the dangers of sickness ; thus preventing the progress of disease to any alarming height, and from irrecoverably debilitating the constitution. A military friend informed me, the other day, of his medical attendant having told him, that it was impossible for him to attend to trifling indisposition ; that as my friend's was only a trifling cough, he really felt indifferent about it, as no danger was likely to accrue to the constitution from his complaint. But how many confirmed consumptions proceed from trifling cough, when unheeded or neglected ! A single grain of sand in the eye, if not removed, will gradually produce inflammation, till it attain such a height, that the eye is destroyed ; and we all know what a small quantity of virus has produced extensive disease : the small-pox, for instance, which, when once produced, who can limit its progress ? Indeed I believe most fully, that all important effects take their rise from trifling causes. In speculative mechanics, it is demonstrated, that the smallest power may be so applied as to balance the greatest weight. I know a professor, who declared to me, that a bit of cheese had nearly caused his death. It remained in the first curvature of the bowels* ; and although he perpetually took purgatives, nothing would remove it from its resting place; until becoming much reduced in constitution, and suffering great pain under that part of the stomach, he proceeded to Bath, where drinking large potations of spa-water, he so washed, as it were, the bowels, that the cheese was expelled. Being thus relieved from this extraneous substance, he speedily recovered.

* Vide plate representing the bowels.

Many substances among our injesta produce effects like this; a waxy piece of potatoe, radishes, cabbages, hard turnips, unbaked bread, such fruits as lechees, and many other articles of daily use, require the aid of purgatives, that by their exhibition sudden death may be prevented by the removal of obstructions, which are often caused from such things as these, though seldom suspected; so little attention is paid to what are called trifling considerations.

This section is designed to prevent diseases by the administration of purgatives; for when my friends look into the second part of this work, and behold the awful catalogue which is of daily occurrence to a medical man, they will be ready to despair on acount of the awful visitations which afflict the infancy of human nature. It will be gratifying to know, however, that the most serious of them may be prevented.

In instances where mothers have wholly depended upon my advice, respecting their children's diet, clothing, medicine, &c. they have been fortunately reared without requiring a single grain of calomel; but no sooner have they left me, and yielded to every recommendation set forth by numerous friends, than it has been necessary (to use a medical phrase) to pour in calomel of immense quantities, to excite a biliary action; for torpor in the liver, and a want of action in the digestive functions of the stomach, is a sure consequence, until we clear the little bowels of all the rubbish with which they are filled.

First, then, I must earnestly entreat, that mothers will pay strict attention to the diet proposed in this work, as being of the first importance. The next thing is, that they must see every dejection which is passed, and ascertain whether there be mucous, or slimy matter in it, resembling the white of an egg; then, if the child has cried and been peevish, she will ascertain the cause to be from the slime; and should she ever find occasion to call in a medical gentleman, she must not stand upon any false ceremony of delicacy with him, but invariably produce the dejections; for they are the index of all diseases. I can speak for myself, that I could not understand a child's

constitution or disease, without knowing the ordinary colour, consistence, frequency, &c. of its dejections.

I mention this circumstance, because I have known ladies look very much abashed, lest these indispensable inquiries should be made; for no one can be supposed to be so well acquainted with every particular, as the mother herself; and if these interrogations are made through a husband, the replies are never satisfactory. This false delicacy towards a medical man ends in injury to the child, as he goes away only half informed on the nature of its complaints. When the mother has adhered to this advice, she will herself soon become informed of the true nature of unhealthy, and healthy discharges. Those of the latter are of a bright yellow tinge, as well as of a dark yellow; but if green, it is proof positive that there is acid in the stomach and bowels. An appearance of slime shows that the food is irritating to the bowels; and white evacuations evince a want of bile.

Now these are the different states into which a child's bowels change, more or less, in India. Instead, therefore, of the several discussions which take place in our Eastern nurseries, such as, "Oh! there is no medicine like castor oil; for my part, I have given it to all my children;" another lady affirming, "There is nothing like jalap;" another, "senna tea;" others "rhubarb;" and many "calomel:" but all may be called into use. At other times we shall find all disagreeing, with the very same child, and remaining inert. The reason of this is, no knowledge is acquired of the nature, or attention paid to the character, of the dejections.

Frequently, on recommending a particular medicine, it has been argued by mothers, that they could not think of giving that medicine: "I am confident my dear child will reject it; it never agrees, it would be quite cruel." But while their thoughts were bent on what might occur, mine were directed to what had actually taken place. There is no such thing, I can confidently assert, as a specific in medicine; for that which will cure a disease one year, ordinarily fails the next, because the state of the constitution is not always the same. I may instance, that

at one time, with the same disease, it may be full of blood; at another, reduced and weak. Surely there would be a difference in the effect of the medicine. We shall know this from the general character or state of the child's health, and the remedy should be regulated accordingly. At one time, the stomach is morbidly filled with acid; at another, the reverse. At one period, the liver is replete with bile, at another there is a deficiency: occasionally, the stomach is oppressed with indigestible, extraneous matter; and it is not unusual, at some moments, to find distention from wind; so that it may be fairly conceded, that these changes operate on the effects of medicines, and prevent any in themselves becoming specifics for diseases at all times and in every constitution. It is an ignorance of these truths that does serious harm.

When I have prescribed purgatives for a child, the mother has often exclaimed to me, "Oh, dear, what? another dose! Let me apprize you, that my poor child has not eaten or taken any thing for these four days! Surely there can be nothing more in the poor little thing to clear out!" Such mothers, I firmly believe, think, that doctors are playing a game, such as putting food in the stomach, and then purging it out again. But it is not to take away food that we give medicine, but to clear out the slime and filth that may be clinging about the bowels and stomach. It bears no reference whatever to food; yet that it does, the most sensible and best informed people ordinarily, but erroneously, imagine.

Let this rule, therefore, be observed: when the dejections are green, give the child a tea-spoonful of magnesia; if it does not operate, the colour of the dejections proceeds from some other cause than acid, which will be effectually removed by the administration of five grains of calomel, which is to be worked off by the senna and salt mixture to be mentioned in the next page. It is impossible exactly to regulate the doses of medicine according to the age of a child*, as I have frequently

* A table of doses for all ages will be found in Part III. as a rule to be adopted as far as possible.

found one of eight months require an equally strong dose with another of two years: indeed this fact I have known in the same child, that a dose at seventeen months was something less than what it had been accustomed to take at six. If the magnesia should have operated in effecting a copious dejection, let this medicine be given to the child every other morning, until the dejections become healthy; and the mother must also pay particular attention to her own diet, lest the cause be in the acidity of her milk, arising from something which she may have taken. If the child is feeding and weaned, inquiries should be made respecting the vessels in which the food is cooked, or whether the cup or plates are clean in which it is put. In order to ascertain whence the acid originates, it would be advisable that this search be made by the mother, or she may never discover the truth; for let it be held in recollection, that servants in the East consider it quite an honour to tell a falsehood boldly and successfully. It is indeed most astonishing with what an undisturbed face they defend themselves, even against open conviction.

In event of slimy fæces, give two tea-spoonfuls of senna and salt mixture, as mentioned in this section, daily, or more if expedient, until the cause be removed, which is generally effected after two or three doses; when not unusually it is found that some indigestible lump has been in the bowels, causing considerable irritation.

Should the dejections prove of a pale white, or of the same colour as are passed by rabbits or cats, it is an evidence of a want of bile, which is the most frequent complaint of children in India; and where there is a deficiency of bile, there will always be slime, considerable indigestion, and acidity. The only remedy in this case, will be one grain of calomel daily, given about six P. M. with a dessert spoonful of the following mixture every morning, or more, if necessary, to effect two copious evacuations daily. This is to be continued for ten days, when the bowels will probably become of a healthy character. Take Senna leaves, four drachms; Epsom salts, two ounces; brandy, half a

wine glass: oil of peppermint, ten drops; pour on this one pint of boiling water; when cold, strain for use.

It sometimes occurs, that a child, in defiance of all advice, is permitted to take a little too much food: the belly swells, hardens to an enormous size, and the skin becomes hot; difficulty of breathing is felt, and evident oppression. In a case like this, without delay, throw up a glyster, to be made as follows. Two table spoonfuls of castor oil; two of the Epsom salts, and half a pint of hot water; to be used when warm. Let this be repeated every five minutes, until the bowels act, giving on the instant also, ten grains of powder of jalap, with two of cream of tartar. Such is the simple road to pursue with respect to purgatives, where there is no actual disease.

I now bring the First Part to a conclusion, and trust, that whoever is desirous of acquiring the information I have been anxious to afford in rearing children, will read these pages from the commencement; otherwise I cannot answer to their being properly understood. Not being a book-maker, I am not qualified in that happy knack of hitting off parts into divisions and subdivisions, so as to make each division and subdivision carry with it its own explanation. I must likewise intreat pardon for my familiarity of address, and freedom in adopting the ordinary expressions among my patients. It seemed, in my opinion, necessary to explain my meaning clearly. I am not accustomed to use flattery, and feel conscientiously cautious of disguising the truth. If candour be gallantry, I have sufficient to confess, that nothing can afford me such real pleasure and satisfaction as the being of service to mothers, and their lovely infants, the most beautiful part of the creation.

END OF PART FIRST.

PART II.

DISEASES OF CHILDREN.

Section I.

History of Teething.

I shall not divide diseases as they usually are in medical works; but in pursuing a plan of my own, I am led to consider, as of primary import, the effects of difficult dentition, as the cause of fever, convulsion, purging, eruption, water in the head, and a wasting away. Let us, therefore, first enquire into the true nature of the cause, and the consequence will be easily foreseen.

The world is generally very incredulous, and I am not of that eminence that my name should be a sufficient voucher for what I myself assert; I must, therefore, bring in my evidence, and inform my readers what science has already acquired on the subject of dentition, which I trust will at least show, that I am not writing at random on this very important subject.

It has been observed by Dr. Hecker, in the first number of his Magazine for Pathological Anatomy and Physiology, that the common opinion of the act of teething in children is subject to some difficulties, as it cannot be well explained how it is possible a part, as the gums, not possessed of much sensibility and irritability, on being irritated from the teeth cutting through, should produce such violent symptoms as are observed sometimes during the period of first dentition: another cause ought, therefore, to be sought for, that will prove more satisfactory in explaining, and more useful in directing a proper practice and cure of those symptoms, to which so many children fall a sacrifice. It is a general law, founded upon facts and experience, that as soon as the organs of secretion are diseased, or affected in a morbid

manner, they secrete such humours as are also morbid and preternatural. "Thus an irritation of the liver will produce a sharp and corrupted gall; passions often render the milk venomous; and the mildest saliva of an irritated and angry animal becomes very malignant and poisonous. In a child that is cutting teeth, many circumstances take place, which are sufficient to turn the saliva into a very powerful, malignant, and even deadly poison. We observe a great collection of saliva, and an irritation in the mouth of a teething child; it suffers a great deal of pain, is restless and sleepless, is continually crying, irritated, and in a degree of passion; this already may lead us to conjecture, that the saliva acquires such malignity as to cause many and very dangerous symptoms of difficult dentition."

"It will, however, be still further proved by the following arguments," continues this author, "that a corruption and acrimony of the saliva, almost similar to that in the canine madness, is the principal cause from which all the most dangerous symptoms of dentition are to be derived. Many symptoms of dentition admit of a more natural and easier explanation from this saliva, than from the irritation only, viz. the cough, laborious breathing, the collection of pituitous* matter in the breast, suffocation, &c. Swallowing it causes vomiting and diarrhœa. When it possesses a high degree of acrimony, or when its excretion is by any means obstructed, it produces, in sensible and irritable constitutions, hydrophobia, lock jaw, epileptic fits, &c. The acrimony being imparted to the humours, gives rise to fevers, and exanthemata† or inflammatory eruption.

"Inflammatory and other affections of the genitals are owing to the acrid saliva having thrown itself upon the urinary system. A complication of dysentery and dentition is consequently very dangerous, because the bowels are thus likely to be doubly affected."

Dentition has been observed to be slight and easy whenever the salivation is considerable, or salival humors

* Mucus secreted on the membrane which lines the nostrils.
† An eruption of the skin.

evacuated by other emunctories* of the body. "There is a great similarity between the symptoms of difficult dentition and those of real hydrophobia; apparent from the impediment in swallowing and other spasmodic affections. Several children, who died of difficult dentition, had bloody stools, attended with a tenesmus†. Upon dissecting the body, erosions and inflammations were found in the throat, stomach, and intestines‡, which were most probably caused by the acrid saliva. Something similar has been noticed in the stomach of persons who have died of hydrophobia."

The intelligent Dr. Brandies, of Brunswick, known by several excellent publications, and translator of Darwin's Zoonomia, advances his opinion of the nature and origin of the dangerous symptoms sometimes observable at the time of first dentition, in his book on Metastases, 1798, in German. Although he agrees with Armstrong and Hecker, that they are not to be derived only from the irritation of the nerves of the teeth, yet he rejects their theories, and rather thinks that a suppression of salival secretion has the principal share in producing those symptoms. He observes, that the secretion of saliva is much increased by the topical irritation in the mouth, which becomes very necessary to the constitution of the child; when in his opinion the topical irritation is too vehement, in a difficult dentition, and that it extends to the salival glands, and causes a suppression of the secretion of saliva. It may be observed, according to this author, therefore, that the mouth and lips become dry and cold, in bad cases; meanwhile there is a great degree of febrile heat in other parts of the body, which is a diagnostic§ sign of this dangerous disease.

He is of opinion, that when the suppressed action of the salival glands is replaced by that of the pancreas‖, a purging comes on, which generally continues as long as the difficult dentition is accompanied by those symp-

* Vessels which discharge perspiration.
† Straining in stool, as in dysentery.
‡ Bowels.
§ Distinguishing.
‖ A large gland situated under the stomach.

toms, which contribute very much to diminish the violence of them, and of the concomitant fever. But, on the contrary, when this does not take place, nervous symptoms, convulsions, and a nervous fever arise, which, having a great similarity with water in the head, is very well described by Armstrong, under the name of hectic fever. We conclude, therefore, that these nervous symptoms cannot be ascribed to the nervous irritation arising from the teeth cutting through, which he would endeavour to prove by the following consideration.

"Nervous symptoms, arising from a reaction of the sensorium* caused by the pain, are never removed by any material excretion, as this manifestly happens in difficult dentition by salivation and a diarrhœa of watery humours. All anodynes and antispasmodic remedies, particularly opiates, which, in convulsions proceeding from pain, prove so very efficacious, are without any avail here;" of which circumstance Dr. B. had frequent experience.

In passing over the medical writings and annals of all times, difficult dentition will be found to be almost unanimously acknowledged to be a pathological phenomenon, and the immediate cause of many dangerous diseases in children. Mercurialis, who wrote about two hundred years ago, mentioning dentition, treats it as a disease, or, at least, as pain concomitant with that operation of nature. In modern times also, some arguments have been suggested against the general prevailing opinion, by Cadogan†, and by Armstrong‡, to which his translator, Dr. Schoffer, has added his own observations, tending to prove the insufficiency of difficult dentition in producing some diseases of the infantile age, which are commonly deduced from that cause.

Notwithstanding these doubts, Cadogan, Armstrong, and Schoffer, still consider it in too great a measure as the source of many infantile diseases, not being able to prevail on themselves totally to lay aside that opinion, although they have found it in some respects inconsistent with their own observations and experience. Dr. Hecker, even

* The sensitive brain.
† De Puerorum Morbis, Francofurt 1584, p. 312.
‡ On Nursing, p. 31.

though he denies that those dangerous symptoms originate from the teeth cutting, considers dentition as a pathological phenomenon, ascribing it to an irritation in the mouth, which necessarily must be caused by the teeth penetrating through.

During an extensive practice of 30 years, Dr. Wichmann* never could persuade himself of the justness of the idea on difficult dentition; and confirmed, by his experience, in the doubts he had always entertained, he attempted at first to lay them before the public at large, "however conscious of the hazardous task of encountering a matter that hitherto served as an *asylum ignorantiæ* to many physicians, in explaining almost every morbific symptom by which infantile age is affected, and which so often proves fatal to it."

The frequent mortality of children occasioned in the first years of life by convulsion, is mostly attributed to the act of dentition, by which Hurlock and other dentists account for them. Berdmore† asserts, "that more than half the children dying in the first two years of their life, fall a sacrifice to dentition; and in this the greatest part of practitioners seem to have acquiesced, though none of them have ever given an exact account and explanation in what difficult dentition properly consisted, and the supposed morbid state hence arising."

Dr. Wichmann's opinion consists in maintaining, that difficult dentition ought to be entirely exploded from the catalogue of diseases, and that as a pathological phenomenon it exists but in the fancy of physicians. To support, and prove this assertion, Dr. W. enters upon a disquisition and examination of the different symptoms of difficult dentition, and shows how far they stand the test of criticism. The symptoms supposed to attend difficult dentition, according to this author, may be divided into topical and general. Amongst the topical signs, he mentions having enumerated —

"*A swelling and hardness of the gums;* and this is looked upon as the surest diagnosis of difficult dentition, parti-

* Diseases of Children, p. 60.
† Practical Treatise on Dentition, 1742.
‡ On the Disorders of Teeth and Gums, 1770, p. 192.

cularly when children are not yet able to express the sensation of pain hence arising." But it is obvious, affirms Dr. W. "that such a swelling will be always found in the healthiest children, who get their teeth in the easiest way possible. When a tooth is preparing to cut through, if the swellings were in the least of an inflammatory nature, they would certainly spread themselves over the neighbouring parts; but they are limited and single; elevations are only to be perceived, more or less, according to the number of teeth ready to break through. Instances of inflammation, and of tension of the gums, and of a swelling of the cheek, which have been observed by some practitioners at the time the double teeth are cutting, deserve hardly to be brought forward as an argument for difficult dentition, and must rather be considered as anomalous cases, deviating from the natural course of nature, and as differing from dentition, commonly supposed to be difficult, and described only as something extraordinary. Moreover, this supposed inflammation of the gums ought to be particularly evident and strong in the cutting of the eye-teeth, generally believed to be less easy, and therefore principally dreaded, if it were a sign of difficult dentition; but on the contrary, on a close inspection, that suspected red elevation will not even be found when those teeth are almost hourly expected to cut through, at the end of the second year, although some symptoms of illness or difficult dentition appear at the time they are cutting through."

Redness of the gums is likewise a precarious symptom, in the opinion of this physician, as on the spot where a tooth is appearing, the gums are for the most part rather white than red. "Pain of the gums is counted amongst the most important symptoms of difficult dentition; and though children are not always able to express the sensation of it, and still less to point at the place whence it arises, yet its existence has not been in the least doubted. However, children hardly complain of any pain on touching the gums; and even when they are of such an age as to be able to express themselves, and to denote exactly the very spot where they feel the pain,

particularly at the appearance of the eye-teeth, yet they never distinctly complain of pain at these suspected places, though they are most closely examined, and most expressly asked for them."

"Besides this, it might be presumed, that pains would be more perceptible in cases where teeth break out in a preternatural way or direction; but this has not been found to take place when they grow one after another, forming a double row. Now if in these cases the jaw, the gums, the periosteum*, the nerves, or whatever else to which difficult dentition has been attributed, suffered no affection at this time, at a state so evidently violent and morbific, how can they be supposed to be affected when the growth of the teeth is slowly proceeding in a natural way, and without any violence?"†

"We moreover find it recorded by some writers, that children come into the world with teeth, that had cut through before their birth, where nothing can be thought to have been prepared for such an action; these children could have hardly lived, if dentition were at all a violent and painful act. Having pointed out how precarious and uncertain those symptoms prove to be, it only remains to examine whether the gums or the periosteum are really capable of giving pain, or whether, as it is commonly asserted, those parts are susceptible of such a tension as not to emit the teeth without a painful sensation."

Dr. W. therefore proceeds to negative the belief that there is such a membrane as a periosteum, by declaring, that all anatomists and physiologists agree, that the upper part of the gums is nearly deprived of sensation. J. Hunter, the first author on this subject, speaks in his History of the Human Teeth, of the perforation of the gums, without in the least mentioning a periosteum; and in explaining the pains attending dentition, he believes that there is an irritation which produces a diminution and absorption of the gums,

* The membrane which covers the teeth.
† On Diseases of Children, in German.

at a time when, according to others, a swelling of them is observed. Blumenback* says, that the teeth lie inclosed in a membrane; but he does not intimate that the upper part of them is also covered with it. By the silence of other anatomists, as Prochaska†, Albinus, Meyer, Loder, it may be justly supposed that it does not exist after the birth. However Haller expresses himself very distinctly on this subject. Soemmering says‡, "While the roots of the teeth are growing longer, the teeth are protruded, and bare of periosteum, they penetrate the gums." "A still greater authority for this opinion is Alexander Monro, one of our first writers on osteology, who rejects the existence of a periosteum in plain words :" "Without the gum, the teeth are covered with no membrane‖."

After having given these proofs of the non-existence of a periosteum, this author deems his arguments conclusive, by observing, that it is needless to dwell any longer upon this subject; and it only remains, in his opinion, to be considered, whether the gums are thus pierced and irritated by the teeth, so as to produce those dangerous symptoms of difficult dentition.

It has already been intimated, that the best and latest physiologists agree in denying almost all sensibility to the gums; but this is farther confirmed by the testimony of surgeons, who think the incision of the gums an operation attended with no pain, and consequently the gums are nothing but a senseless, spongy substance, which easily yields to the pressure and growth of the teeth. Hunter himself attributes but little sensibility to the gums, remarking, that before the teeth appear, they serve in their place, which is likewise the case with old people.

Another inconsistency is, that it is proposed, by way of lessening the danger of dentition, to make the incision, which is supposed to be attended with no pain, and yet a pain in the gums is taken to be the cause of dangerous symptoms. If, then, those distinguishing signs

* History and Description of the Bones, in German.
† Annotationes Academicæ.
‡ On the structure of the Human Body, in German, 1791, T. i. p. 207.
‖ Anatomy of the Bones, Edin. 1748, p. 149.

so generally considered strong and incontestable, are proved to be uncertain and illusive, and if at the same time, no pain can arise from the gums, which has been supposed to be the cause of all the different symptoms of difficult dentition, it must be candidly allowed, that this pathological explanation is deficient and uncertain.

Our author now proceeds to show, that *salivation* is another symptom attending dentition, on which physicians rely so much, that at perceiving this in a child, they do not require any other symptom, and hardly think it worth while to examine the mouth; but if they should, they would very frequently find salivation occasioned by aphthæ*, of which it is, as well as pains, a common symptom; and although they are not always met with, yet they are more frequently the cause of this salivation than they have been hitherto supposed to be; and in case they should not be there, it is more natural to derive the salivation from a slight irritation of the salival glands, than from dentition. There is still another symptom likewise apt to deceive, and that is, when children often move their hands towards the face. Of many instances, the following may prove its being fallacious.

"A child two years old, had been sickly about a fortnight from an unknown cause; it lost appetite, sleep, and became feverish; it shrieked sometimes, and often brought its hands towards the face." When, on Dr. W.'s undressing and examining the child to discover the cause, "an excoriation in the ear was found, which being removed, the child was relieved, and recovered its health."

In diseases of children, therefore, according to this author, nothing is more necessary than exact examination of the whole body, which will frequently, if not always, show how small a share dentition has in producing them, and how easily one may be deceived in thinking, that the pain arises from the place to which children appear to point.

After having stated what can be said of the topical signs of difficult dentition, Dr. W. thus considers the general symptoms and diseases ascribed to it. "When all

* The Thrush.

these diseases are impartially examined, they will be found not to differ in the least from other affections, daily observable in the first four months of life, where teeth are not yet suspected, and after the second year, when most teeth have appeared. They seem, therefore, to admit a more natural explanation, by considering them as idiopathic. Aphthæ, diarrhœas, colics, and vomiting, are much easier explained from a corrupted milk, and an inflammation of the eyes from a scrofulous disposition. It seems, likewise, inexplicable, how any kind of dysentery can originate from dentition, as is asserted by medical authors, particularly when no pain in the mouth, and other topical symptoms are perceived, and when similar evacuations occur in the children of five or six years of age. It is more probable, that it arises from a topical cause, or any other less remote from the intestines. A strangury and retention of urine are also supposed to be consequences of dentition in female children; but they really are only owing to an excoriation and exulceration of the genitals, and easily yield to a topical treatment. A lethargic state is more probably caused by water in the head than by dentition. The discharges of matter with urine, which is sometimes observed at the time of dentition, is nothing else than an accumulation of matter, secerned* by the glands, which a topical affection soon removes by injecting under the prepuce. With respect to the fever incident at the period of teething, it may be observed, that many circumstances can occasion it, as children, even in that age, are subject to every febrile affection. Dr. Rush has seen the yellow fever in a child of four months old, without any necessity of assigning dentition as the cause of it; and it is scarcely pardonable to neglect other remedies, with the idea of its being merely the consequence of the irritation of the teeth. Besides, it does not appear that it is removed when the teeth have cut through; and frequently, when the fever has been attributed to dentition, no teeth have appeared. There are also some febrile affections re-

* Secreted or formed.

marked, as symptoms of a latent scrophulous disposition, which are frequently mistaken for the teething fever." Of all morbid affections by which children are afflicted, this author adds, during the time they are cutting their teeth, none have been so "generally, and without exception, attributed to dentition as convulsions; but when we consider that most probably they are owing to causes more frequently occurring, to a momentary corruption of the milk from passions of the mind, to other diseases of the nurse, to the restoration of the *fluxus mensium*, &c. and when we farther consider, that all important diseases generally begin with convulsion in the infantile age, it may be concluded how precarious the idea will prove in the practice."

"The following case may, moreover, prove the fallacy of this symptom. A healthy boy, seven months old, was siezed with convulsions and pains, which recurred in a shorter or longer space of time. Gentle purgatives, clyster, and blisters behind the ear, removed these affections; but after four weeks, no elevation or penetration of a tooth was to be perceived."

Such are the symptoms and history of dentition, the deficiency and fallacy of which I have attempted to point out. Doctors Bradley, Batty, and Noehden, have reviewed these opinions in their Medical and Physical Journal, to whom I am indebted for this important discussion. The reviewers observe, that their theories are very ingenious and plausible. Several doubts, however, may be raised against them, to which they seem to be exposed. In the first place, Dr. Brandis objects to Dr. Hecker's opinion, that as the symptoms of difficult dentition do not arise before the salivation is entirely suppressed, and conseqently, before the secretion of any saliva is stopped, they cannot owe their origin to its acrimony, of which quality he never could perceive any signs in a teething child. But should not the existence and action of such an acrid humour be proved by the erosions and inflammations that have been found in the throat, stomach, and intestines of children dying in a high degree of difficult dentition? However, even when this is allowed, it may be suggested, that it

would be more proper, and agree better with our improved knowledge of animal economy, to derive primarily the morbific secretion of the saliva, and the symptoms of difficult dentition, from the same proximate cause, which consists in the nervous irritation, and to consider both as the congenial effect of it, and not the morbific saliva as the original cause of these symptoms. It is moreover obvious to remark, in general, that the idea of an acrimony wandering through the body, and causing diseases, is by no means evident, but is built upon hypothetical principles.

The opinion of Dr. Brandis is founded upon his theory of Metastasis, which he has proposed in the work above mentioned. According to this, the idea of Metastasis ought to be thus conceived: "When certain actions in any organ or system of organs cease, or are by any means diminished, they must be replaced by another action in another organ or system of organs of the body, dependent from the former action. The first may be called the original; the second, the vicegerent action," in dentition. Now the secretion of saliva, the original action of the saliva system, caused by the topical irritation in the mouth of a teething child, is become necessary to its constitution. If that action happens to be stopped, a vicegerent action is excited in another organ; and if this take place in the nervous system, all those dangerous symptoms appear, which are to be attributed to difficult dentition. It is, however, not requisite, and would lead us too far, to enter into the particulars of this ingenious theory; it may suffice to observe, that the suppression of saliva secretion might be more naturally considered as the effect of nervous irritation, which by its violence, at the same time produces other symptoms of difficult dentition.

This explanation is suitable to known laws of the animal economy, according to which, secretions are increased by a moderate degree of irritation, and suppressed whenever it becomes too vehement. When salivation, therefore, is not suppressed, but rather increased, and the symptoms without danger, the irritation of the nervous

system is moderate, which being relatively vehement, must be looked upon as the common cause of both the suppression of saliva as well as of the violence of the symptoms. Salivation, however, may be of some service in dentition, by rendering the gums tender, and more easily to be cut through.

Anodynes and narcotics, whose efficacy is denied here by Dr. B., have generally been found to be very useful by other eminent practitioners; and even Dr. Hecker recommends the extract of Hyosciamus, though he ventures not to give opiates, which however, in some instances, may prove likewise very useful.

Dr. Underwood has long been deemed one of the most able writers on the diseases of children. "Many complaints," observes this physician, "such as cough, fever, the rickets, and even pulmonary consumption, and marasmus," are described as effects. "The time of teething is a most important period of the infant state, and subjects it to manifold complaints and dangers. Some writers, indeed, and particularly Dr. Cadogan and Dr. Armstrong, seem to think otherwise; and that teething is scarcely to be ranked amongst the diseases of infants. They have imagined that children, if otherwise healthy, would cut their teeth with no more danger than adults, who often cut the *dentes sapientiæ*, so called, without any difficulty, and always without hazard: they likewise observe, that many children get their teeth easily. But this argument must suppose the healthiest and best-natured children to be, in all respects, in the same circumstances with adults, which is by no means the case; as they are liable to fever, dangerous purgings, and even to convulsions, from causes that would in no wise affect the latter; nor can they stand under some of those complaints so long as adults, nor endure the necessary remedies. For the same reason, the measles and small-pox carry off such numbers of infants, when attacked by them a little more severely than common, whilst young and healthy adult subjects often struggle through the most dangerous and complicated kinds, when properly treated from the beginning; not to men-

tion, that very few infants, who are unhappily affected with a particular disease, recover under any treatment, whilst adults are cured in the most advanced stages of the complaints, notwithstanding some parts may be actually mortified. I have, therefore, no doubt, that the time of teething ought to be ranked amongst the most hazardous to infants, and that the greatest attention ought to be paid to it; though it is probable, on the other hand, that Dr. Arbuthnot over-rates its fatality, when he says, that one child in ten may be supposed to sink under it: at least, I believe that this dentition, being disposed to inflammation, such children much oftener fall into fever than the tender and delicate; like athletic adults, who are more disposed to inflammatory complaints than those who are of a colder, but less healthy temperament; and it is by acute fever, or convulsions, that infants are carried off, who are well known to survive a thousand lingering and vexatious complaints, if their viscera are sound. It may be here observed, however, that convulsions more rarely take place where a fever attends."

There are also other circumstances that affect the process of dentition, among which the three noticed by Hippocrates, I believe, are well-founded: "That infants cut their teeth more readily in winter than in summer; that such as are rather inclined to be lean, cut them more easily than those that are very fat; and children who are loose in their belly the most safely of all." Rhazes and Primrose are of a different opinion in regard to the fittest season; but of the truth of the last of these observations there can be no doubt.

Teething is usually preceded and accompanied with various symptoms, according to Dr. Underwood. The child drivels; the gums swell, spread, and become hot; there is often a circumscribed redness in the cheeks, and eruptions on the skin, especially on the face and scalp; a looseness; gripings; green, or pale stools, or of a leaden, blue colour, sometimes mucous, often thick and pasty; watchings, startings in the sleep, and spasms of particular parts; a diminution or increased secretion of the urine, sometimes of a milky co-

lour, at others, staining the cloths in patches, as if it deposited a brown powder; a discharge of matter, with pain in making water, (imitating exactly a virulent, mucous discharge,) which often mitigates the fever; in almost all cases, the child shrieks often, and thrusts its fingers into its mouth. A symptom, less common than any of the foregoing, and appearing only in certain habits, is a swelling of the tops of the feet and hands. It seems, however, to be of no importance, and goes away upon the appearance of the teeth." "I," says the Doctor, "never met with it but in infants who cut them painfully; and being seldom accompanied with a purging, it is likely may (in its stead) prevent that fever which is otherwise so apt to attend. In some instances, however, this symptom has been accompanied with considerable fever, but only in those children who have either been costive, or whose stools have been fœtid and clayey, and the swelling of the extremities very considerable. I have likewise, in a few instances, met with a transient palsy of the arms or legs, which in one infant recurred as often as the teeth were protruding. The above-mentioned symptoms are often followed by a cough, difficult breathing, fits, fever, scrofula, and marasmus, and sometimes by hydrocephalus. Strong and healthy children, it has been observed, cut their teeth earlier than the weak and tender, but are more subject to fever. I have known a weak and rickety child, without a tooth at twenty-two months old, though it lived to grow up; but at the age of five years became scrofulous. The fact, I believe, is, that the extremes of high health and debility are both dangerous; the one being exposed to acute fever, or convulsions, the other to a slow hectic and marasmus. Therefore air, exercise, wholesome food, and open belly, and every thing that has a tendency to promote general health, and to guard against fever, will greatly contribute to the safety of dentition, and to children passing quickly through this hazardous period."

"The lungs, it has been said, are one of those parts on which the irritation from teething is apt to fall; and when fixed there, the symptoms bear an alarming aspect. A precise acquaintance with their true cause is therefore

of the greatest importance, otherwise an unsuccessful plan of cure will be adopted. I speak this from much experience, having known good physicians overlook the true cause of the inflammatory symptoms, especially when children have cut the usual number of first teeth. In such cases, I have met with the most alarming peripneumonic symptoms; soreness of the chest; cough; and great difficulty of breathing, with loss of appetite, continual fever, and the appearance of general decay."

Thus have I endeavoured to put my readers in possession of every opinion of importance on the subject of teething; and although I may have failed to improve them in the knowledge of this intricate subject by so doing, yet I trust it will have appeared that reasoning founded on theory merely, is not to be wholly depended upon. It is building upon a sandy foundation: every day's experience shakes the edifice.

It is shown that cause is inscrutable: and while it is too often keenly sought for, effect is working irreparable injury. We know, that moisture upon steel corrodes and rusts, and we know, if we remove the moisture the moment it appears, the corrosion will not ensue, and we prevent the operation of a second cause: but on the contrary, if it be permitted to remain while we are seeking after the cause of moisture, the effect and the cause co-operate, by which two enemies appear in the place of one; whereas, had we studied only effect, by removing it by the intervention of art, although we still remain in darkness respecting the cause, we remove both, and our object is gained. We are, I am thankful to say, therefore, better informed how to remove difficult dentition than we are of the occult nature of the cause. Let me earnestly recommend mothers, therefore, to look only to the actual stages of teething, and keep a good watch as the teeth protrude, and to be unprejudiced by vain hypotheses. It is a fact, that some children cut their teeth without the least pain or uneasiness; while others, on the contrary, experience not only fever and purgings, but that excessive pain which excites spasms, and also convulsions. To study the cause will be a waste of time: it is of no im-

portance whether it be venomous saliva, nervousness of the gums, or the many other excitements to which it is attributable; we shall more probably obtain our purpose by proceeding to state what actually does take place, what generally prevents, and what is ordinarily the cure.

With respect to the progress of teething, it differs almost in every infant. I have seen children without a tooth, or any appearance of one coming, at ten months old; while I know an instance where sixteen were through, eye-teeth inclusive, at eleven months, and of another child, who had his twenty teeth at eleven months.

I have known also an instance of a child fifteen months old without a tooth, who afterwards cut six without the least difficulty or inconvenience. This child was lamentably reduced and weak before the teething commenced, but was a fine, strong child during the process of dentition. While preparing this sheet for the press, I was told of an extraordinary instance of a child who had no teeth at its eighteenth month, but in its twentieth had eight teeth, which were all emitted nearly at the same time. I have seen a child myself, born with teeth. I know also two children who commenced cutting their teeth at five months old, and had cut the four first upper and the two first under teeth at seven months: one of these had no more teeth until the twelfth month, and then commenced cutting, not the two remaining lower first, but the double teeth; while the other, in the twelfth month, commenced cutting the teeth regularly, but double and under ones together. I know a child who commenced cutting his teeth at three months old. This shows the irregularity of dentition, in different children, and the absurdity of my attempting to lay down any fixed rule by which it takes place.

The process of teething, however, in the majority of children, is as follows: it commences usually about the fifth, sixth, and seventh month. The commencement is in the two first under teeth. The first sign is swelling of the gums, and little white specks about the size of a pin's head. In seven days a cut through the gums is observed; and next, if the flat of the end of the finger be

moved gently along the gums, the little sharp edges will be felt. In fifteen days they generally come completely through. From fifteen to twenty days, after the two lower, the two first upper teeth begin to show themselves in the same manner. In a month subsequent to the appearance of the four teeth, two more contiguous to the upper follow; and in another month, or six weeks, two corresponding under ones. After this, there is a considerable lapse of time before others appear, sometimes two or three months; then the four first double teeth, that is to say, the contiguous upper and under teeth on each side, appear together; making twelve. These are sometimes very tedious in making their way through. Two or three months subsequent to this last event, the eye-teeth, the most difficult of all, make their appearance, making in the whole sixteen. Some children cut eight double teeth before the eye-teeth, making sixteen. When a child is two years old, he cuts four more double teeth, in some making twenty.

The first four upper and four under teeth are cut ordinarily with great facility; the edges are sharp and cutting, and are on that account, according to medical phraseology, named Incisores, from the Latin *incido, to cut.* Indeed some children hardly express the least annoyance on the eruption of these; but we must not let this circumstance lead us into an error, by supposing that all the succeeding teeth will appear with the same ease, and thus be thrown off our guard. It is not unusual, however, for children to cut the first double teeth, also, without trouble; but as the eye-teeth, as they are termed, come after the double, great difficulty is experienced in finding sufficient room between the double and incisores. Nature has done much to prevent danger and difficulty, by making them pointed; so that by medical men they are called *cuspidati,* from the Latin *cuspis, a point;* they are also called *canina,* from the circumstance of their being the longest teeth, bearing a great resemblance to a dog's tusks. The double have broad crowns, are exceedingly rough, and by medical men are distinguished by the name of *molares,* from the Latin *molaris, a grind-stone,* and are consequent-

ly *grinders*. They frequently occasion considerable swelling of the gums, which are stretched to such a degree of tightness, as to produce a tension equal to a rope exceedingly tight over the teeth. It follows, therefore, that where this tightness is produced, great irritation is excited; and where there is not room for the eye-teeth to pass, equal danger is the consequence.

The wisdom of the Creator has done much to prevent harm and danger, if the instrumentality of man were duly and *reasonably* applied. Let us pause to contemplate and admire the wonderful adaptation of these different forms of teeth. For instance, we find the incisores are to cut the food, the canine to pierce, and the molares to grind it; these mark the period when to commence the use of animal food. The former are those which are called in animals the sucking teeth. The use of the grinders is shown in the action of mastication; that is, during the process of eating: this peculiar action will be observed in the movement of the mouth, even in the youngest infant, who has cut these teeth. There are two large glands at the back of the jaw bones, so that this process of masticating presses out the saliva or spittle, which is secreted in these glands; the mouth consequently becomes full of saliva, which mixes with the food, to soften, and form it into a pulp, which being so mixed, it is rendered fit for passing into the stomach. Now while this process is equally indispensable to digestion and nourishment, so this action is equally necessary to facilitate the process of the eruption of teeth, by a moisture and continual flow of saliva to the gums and mouth.

It is, however, an acknowledged and established opinion among authors and practitioners of the present day, that the action of sucking produces this process of secretion of saliva, and the flow of this fluid to the gums; but on what principle I am at a loss to know; for the very action of sucking, keeping the jaws passive, actually occasions dryness of the gums, and the flow of the saliva to the stomach, instead of to the mouth. If my readers have any doubt on this subject, let them put their own thumbs in their mouths, and suck for

twenty minutes, and observe the effect; but if they have a doubt still remaining, let them take a piece of biscuit, or animal food, and masticate it for twenty minutes, and remark the difference. How erroneous, therefore, the custom of sucking pots, permitting that unnatural custom of sucking thumbs, &c. which without doubt, induces to the principal effect of difficult dentition; but if a child masticates the leg of a fowl, a bit of biscuit, or bread, it will not only bring out the teeth without pain, but add a moisture to the gums, so desirable for the comfort and the pleasure of the dear infant*. There are of course always exceptions, so that I cannot say success will invariably follow; but I can confidently speak, that it will most generally do so: nor do I presume to say, sucking the thumb may not in some cases be of service; indeed the irritability of some children is so appeased by this bad habit, that it becomes questionable, whether it would be proper to prevent it; but it cannot be admissible, except where morbid irritability exists to a prejudicial extent.

In the admirable display of the mercy of God in all the sublimity of his glorious works, we are again attracted to the particular mercy which he has evinced in this process of dentition; and let us, who are blessed with offspring, acknowledge, in thanksgiving, the riches of his goodness, rather than murmur. I lament to say, I have too often heard mothers complain, that their beloved infants should be martyrs to the sufferings of teething, when they ought to trace the circumstance to the true source, viz. to mismanagement; this, however, but few are willing to do, in any case of disease.

In the process of teething, we perceive this gracious arrangement, that the incisores, which are sharp and cutting, are the first to appear, at a period when an infant could not bear the irruption of the double teeth; the eye-teeth protrude after the double; as they are the longest of all the teeth, and pointed, it is reasonable to suppose

* A piece of Indian rubber is an admirable thing to give a child to be constantly biting; there is no fear of its breaking and going to the stomach. It will facilitate the eruption of the teeth, by inducing a flow of saliva into the mouth.

that they can come better between to fill up the vacancy, than the double teeth which follow in regular succession; so before they appear, the child, frequently, by nature itself is reduced by looseness of the bowels, to prevent any inflammatory disposition at this time. The more we contemplate the wonders of the operation of nature, the greater cause do we find for our pious admiration of the all-wise intention and use which everywhere are apparent.

But to proceed: it is necessary to show what are the effects of looseness, so beneficial on the body during dentition, when all things are going on as they ought to do, and all the changes favourable. We shall find a fine, stout, chubby child, whose little eyes are almost lost in milk fatness, which lies in wrinkles one over another, both on the arms, legs, and body, becoming gradually less corpulent; the bowels opening themselves in two or three evacuations daily, the saliva running in streams out of its little mouth, and the child making occasional loud calls, as if between a laugh and a cry.

Nothing, however, particularly attracts the attention of the mother, excepting the child becoming daily less corpulent. This, in the fond and anxious parent's mind, is a symptom of the greatest danger, and a source of uneasiness and alarm, which requires much eloquence and persuasion to remove; and unless the medical attendant is aware of the symptom being the beautiful operation of nature, to prevent inflammation, he may fall into an error, in concordance with the mother, by mistaking the cause, and concluding it to be a want of nourishment; and thus, instead of aiding the process of depletion, fill the child with food, such as soups and jellies, and by so doing occasion a fever, convulsions, and death.

But on the contrary, if the medical gentleman and mother perceive the operation in its true favourable light, they will promote the intention, doing nothing out of the ordinary course, saving a little to decrease rather than increase the child's food. For let it be understood, that when a child is affected with a fever, or any increase of excitement, the first object of the profession is to order low diet, to relax the bowels, and keep them open, which is

only following the intention of nature. So in the natural course of the operation of teething, there is an increase of excitement; nature always takes away the appetite, and opens the bowels.

It requires no science to explain these simple facts; but it is to be lamented that science in the present day wishes to monopolize all the work as her own, forgetting that she is only an assistant; that when the constitution is out of order, it is her duty to assist in making it right again; and it is science to know when it is in or out of order, and not to mistake the former for the latter, or the latter for the former. Rivers have been formed, but their channels are sometimes in their course interrupted by second causes; science must remove obstruction. This is exactly the case in teething; the bowels are often similarly affected, ordinarily by too much feeding, and many other unaccountable accidents; science must, in a similar way, remove the obstruction, before the channel can be opened again, and the ramifying streams through the blood-vessels made to flow unimpeded, and in a salutary manner.

Such, then, is the history and due course of teething. Let us now look to the effects, which are fever, purging, spasms, convulsion, and a gradual wasting away of the flesh. I shall commence with the history of the effect, check of perspiration.

Section II.

Check of Perspiration.

This is the first mention ever made of this as a disease of itself. I not only deem it to be one, but the origin of many other diseases. Teething is one of the circumstances which induces it; and when produced, it becomes unquestionably the proximate cause, not only of fever, but eruptions of various kinds. This disease, check of perspiration, brings me to elucidate, therefore, how the channels of circulation become impeded.

I shall premise by mentioning, that when man was formed, a fountain, by the Almighty's hands, was placed in him;

Fig. 1.

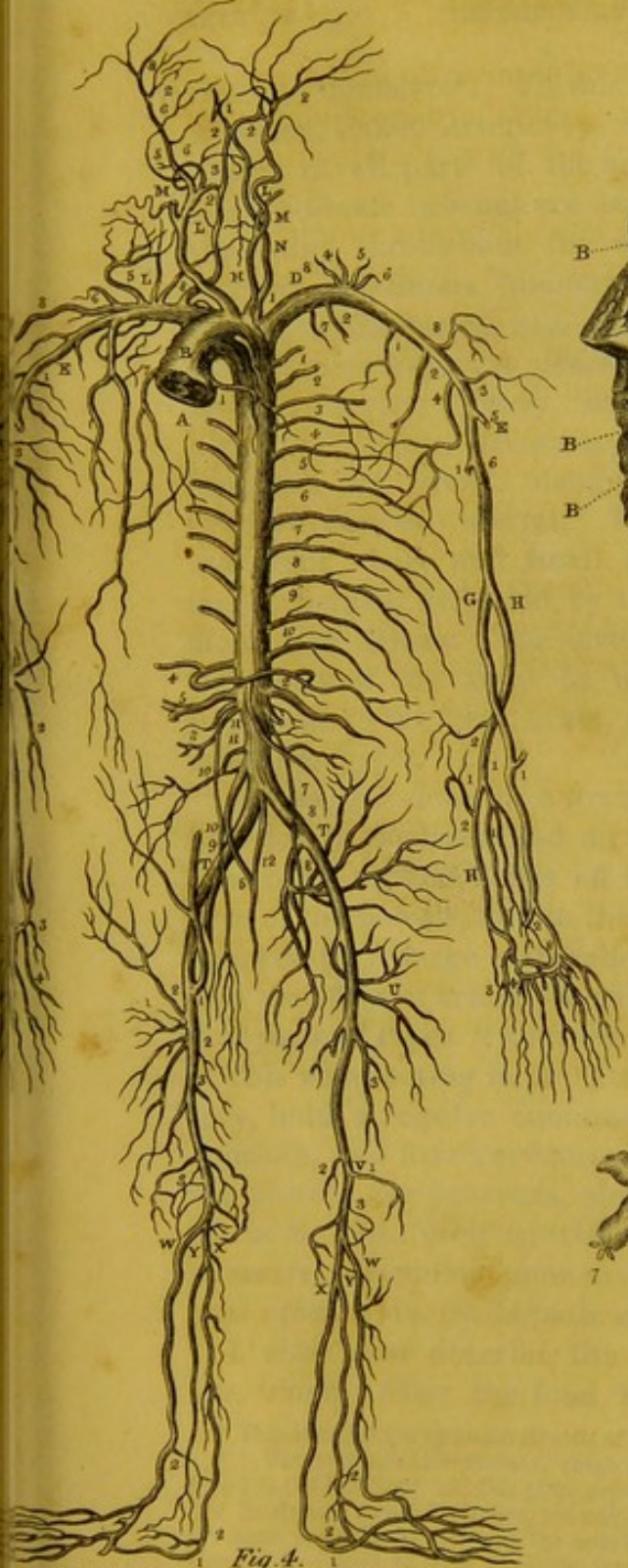


Fig. 2.

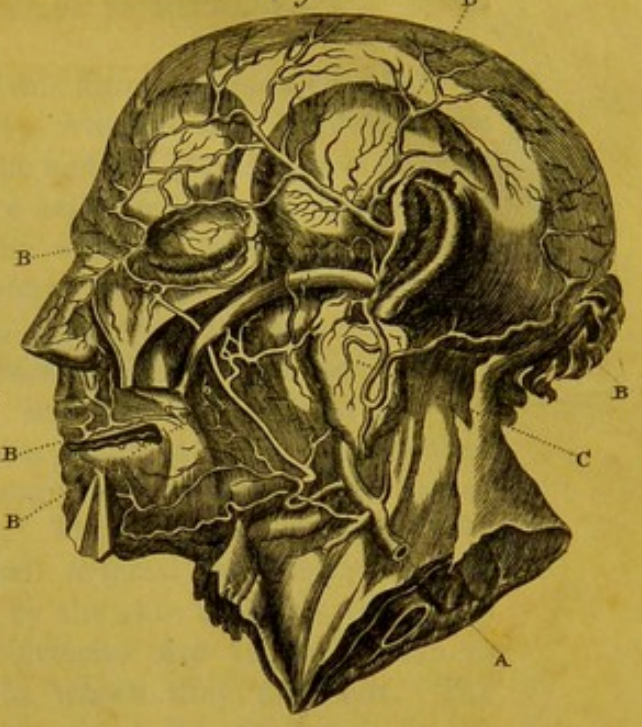


Fig. 3.

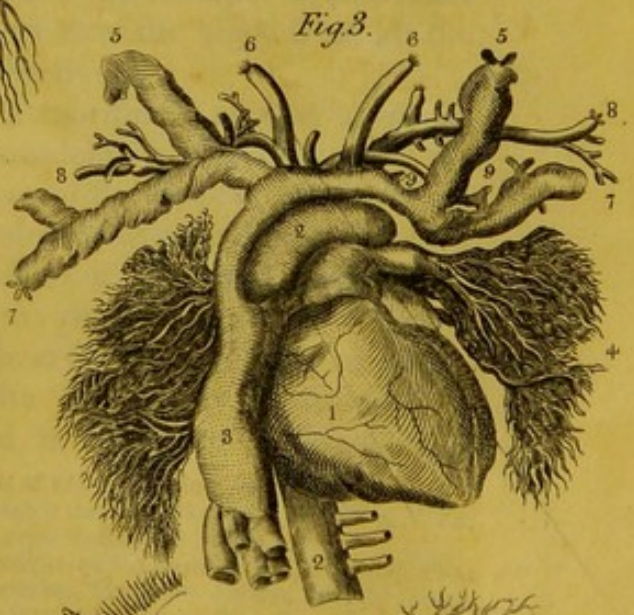


Fig. 4.

Fig. 4.

SHEWS the System of the VENA PORTARUM.

runk formed by the inferior mesenteric, splenic, and of the gastric veins.

anches of the superior mesenteric veins running lym straight lines, where they arise from the intestines.

eolae, or meshes, of different sizes, formed by these veins.

e trunks of the superior mesenteric veins, joining to form vena portae abdominalis.

vena porta hepatica, where it is about to enter the liver.

e branches of the vena portae as they are ributed in the substance of the liver.

he extreme branches of the vena portae, where terminate in the venae hepaticae.

this was the heart*. To this fountain many vessels were attached, called arteries†; whence they conducted the blood‡ to all parts of the body. These vessels or arteries terminate in what are called exhaling vessels; these are found throughout the whole skin, and emit a thin, watery, gelatinous humour, which, by congestion, or excess, is converted into a watery, but coagulable fluid. The all-wise Being, to preserve these important vessels from receiving injury, has disposed the trunks in places of safety; because, as wounds in the smaller branches are always dangerous, so one in the larger is very frequently mortal. Through the skin are spread numerous short and small arterial branches; but the larger trunks, defended by the skin and muscles, creep along the bones. The arteries are in proportion to the parts of the body to which they are sent. The largest go to the liver, brain, spine, &c. the lesser to the muscular parts.

I must now describe a grand sympathizing circulating function in the liver, and mention that the artery which goes to that gland, sends off branches to the first curvature of the bowels, and to the stomach, as well as to the pancreas§. A large vein called the vena portarum, takes also the office of artery; it receives the blood from all the bowels, and takes it into the liver.

This vein, acting in an extraordinary manner as an artery, holds a regular communication, not only with the stomach, and first curvature of the bowels, but all along the bowels, the pancreas, the kidneys, and the covering of the bowels; their nourishment and supply, in a great measure, depending upon the due action of these important vessels, viz. the hepatic artery and vena portarum‖.

I shall now describe the use of the circulation of the blood. After the food is taken into the stomach, it

* This is called the fountain stream of life in the Holy Scriptures.

† "Flesh with the life thereof, which is the blood thereof," Gen. ix. 4. "The blood is the life," xii. 23. See plate representing the arteries.

‡ According to the Scripture, we might use the term life for the blood. Thus the heart sends the life through the arteries. Hence we deduce, that the formation of the blood is from food, the formation of food from the culture of the earth, and the formation of the earth from God.

§ A large gland, situated under the stomach.

‖ See plate representing the arteries.

goes through the operation of mixing with the juice there, then passes into the first curvature, mixing with the bile, &c. there it is formed into the nourishing juice called chyle, which is a milk-like fluid, and is carried to the heart, and formed into pure blood ; thence the heart sends it by the different arteries to the different parts of the body, to nourish it, and to form particular juices : thus an artery takes it to the brain, others to the stomach, another to the liver, others to the kidneys, others to the pancreas, others to the bowels, and so on.

When it arrives at the stomach, it is formed into gastric juice ; at the pancreas, to pancreatic juice ; finally, at the liver, bile. After the blood has been conveyed in the manner described, it is then carried from these parts by different vessels called veins ; and it will impress profound admiration on the minds of my readers, of the wonderful and sublime works of God in the preservation of man, when they are told how the blood is conveyed back to the heart.

It can be easily imagined, how the blood is propelled to the extremities or feet ; but it seems miraculous, how it can be brought back, when we are in a standing position, as it naturally occurs to our minds, that the blood would gravitate to the bottom of the vessels, which are of a very thin, fine elastic membrane, and distend to an immense size. Now this is admirably effected in two ways. First ; a certain quantity of blood only is taken up at a time into the veins : as it is propelled upwards by muscular power, a valve with which these vessels are fitted, opens, and prevents it again gravitating downwards. Secondly ; the superabundance of blood and fluid is carried off by the exhalents, which have been before described ; so that superabundance is exhaled in a kind of fine vapour from the skin, which is termed perspiration.

Before I conclude, I must further tell my readers, what it is that makes the muscles act upon the veins to propel the blood onward. This power is in the nerves, which accompany every vein. They are small fine chords, which are stimulated by some unknown power,

supposed by many to be galvanic, or electric; but whatever it may be, these stimulate the muscle to act just as if the hand were opening and shutting, which according to medical phraseology is called Peristaltic motion, taken from the Greek word *to contract*, so that every time the muscle is irritated by the stimulating power of the nerves, it contracts and propels.

It is this irritation modified, which is the cause of all our sensation; when increased, we feel pain; when decreased, we become almost paralytic; and it is this irritation which gives us the feelings of touch, of taste, of sight, of smell, and of hearing.

Thus I have brought my readers to view the admirable functions of the human body, and the sympathy or connection between the skin and the internal organs of it; and have shown that the purpose of perspiration is to prevent accumulation in the internal parts.

But let me mention another effect, to elucidate this excretory power, and to draw the true character of the morbid derangement arising from a check of perspiration. If there exist any cause by which the bowels do not act, or the urine does not pass, both these excretions pass off by the skin, being taken up by what are called the absorbents. These are vessels which take up any fluid from the surface of the body, or from any cavity in it, and carry it into the blood. They likewise take up these excretions, and thus pass them off through the exhalents, an alternative by which sudden death from obstructions is often prevented*.

At all times, there is a great quantity of excretions passed off by the skin, which gives perspiration that unpleasant smell which accompanies it. Sanctorius, an Italian physician, who indefatigably passed a great many years in a series of statical experiments, demonstrated long ago, what has been confirmed by later observations, that the quantity of vapour exhaled from the skin, and from the surface of the lungs, amounts nearly to five-eighths of

* I am acquainted with an officer in the army, who never had an evacuation for three weeks together. He must have died, had it not been for the profuse perspiration to which he was subject.

the aliment we take in; so that in the warm climate of Italy, if a person eat and drink the quantity of eight pounds in the course of the day, five pounds of it will pass off by insensible perspiration, while three pounds only will be evacuated by stool, urine, &c. But in countries where the degree of cold is greater than in Italy, the quantity of perspired matter is less. In some of the more northern climates, it is found not to be equal to the discharge by urine.

The perspirable matter bears great analogy to the urine; for when either of these secretions is increased in quantity, the other is diminished, so that they who perspire the least usually pass the greatest quantity of urine, and *vice versa*.

Another grand effect induced by this discharge from the skin is to carry off the superabundant heat. When the skin is moist with this fluid, it is always cool; when there is no moisture, it is hot; so that all the heat of the body going through this moist skin, refreshes the whole constitution. This principle is exemplified by a tattee in India. A hot wind blowing through wet grass, occasions a cool atmosphere. It is exemplified in cooling wine and water: wet a cloth, put it over a bottle in a draft of wind; and the wind blowing over the wet cloth of the bottle, cools the liquor. It is exemplified by spirits of ether: drop this upon the skin, and a rapid evaporation takes place, and produces excessive cold. It is exemplified in making ice in India: water is placed in shallow pans, and the wind blowing through grass over the water, produces the evaporation, and freezes the water. I can explain it, however, I think, more clearly, by stating the ignorance of an apothecary, who being called to see a lady with violent head-ache, and having heard that applying ether to the head was an effectual remedy, wetted a cloth with that spirit, and retained it with the flat of his hand over the temples: this, instead of producing cold, produced excessive heat, because the evaporation was prevented by the hand. The pain of the head increased to almost an insufferable degree, and the lady would have died from inflammation

of the brain, had not other medical assistance opportunely arrived; who throwing off the cloths, dropped the ether on the temples, which producing excessive cold from rapid evaporation, the lady speedily recovered. This instance shows, that the ignorance of applying remedies is fraught with the most imminent danger; but it especially exemplifies the process and effect of perspiration on the skin; that as long as it freely exhales, evaporation takes place, and cold is produced; but if any thing shuts up the pores and retards the evaporation, heat is induced.

Thus having described the circulation and effect of perspiration, we deduce the following facts, viz. That in health, the large trunks of the arteries are freed from superabundance by a free discharge from the exhalents; that the arteries are stimulated to due action by the nerves; that excessive heat is prevented when the foregoing functions are not impeded; and that sudden death, from the obstruction of alvine and urinal discharges, is precluded; all depending on a free perspiration, and all liable to be produced when that is checked.

The first effect, therefore, of a check of perspiration is, that the arteries in their large vessels become overloaded, and the bowels are distended with blood, the liver filled, and consequently the stomach and the head. The second effect is, an increased exertion on the part of the nerves to remove the load and to push the blood onward, which excites the most violent pain, and is experienced sometimes to an insufferable degree in the limbs, chest, and head, while the lungs pass off a hot and hurried breath. The third effect is, the urine becomes also hot and scanty, indicative of confined and accumulated heat. The fourth effect is, on account of the quantity of accumulation, there is no desire for replenishment; therefore no appetite. On these grounds, we also account for the depressing sensations of lassitude and fulness. The fifth effect is, that all the secretions are lessened, because there is no replenishment; therefore there is a deficiency of pancreatic juice and bile, evinced by an interruption of alvine discharges; of gastric juice, evinced by loss of appetite and sickness; of saliva, evinced by a parched

dry tongue; and of urine, by scanty discharges. Such is the serious consequence of checked perspiration. It is fortunate, however, that a complete check scarcely ever takes place. Violence of disease depends upon the degree of the deficiency of perspiration. When it is great, one of the first diseases produced is fever.

SECTION III.

Fever.

(See Part III. Section IX.)

An infant, after attaining its seventh month, has a peculiar brilliancy in the eye; and if in health, from this period to the eighteenth month, has a delightful vividness and loveliness of countenance. In the upper provinces of India are found, especially in the cold weather, delicate, rose-coloured cheeks, and lips of fine red, while the soft whiteness of the skin combines with the whole to form a countenance exceedingly beautiful.

The opening faculties of the mind, at this interesting period, appear to the delighted parents. The articulating powers begin to call the endearing names of Papa and Mamma. But at this moment, like a cloud passing over the sun, and hiding his cheerful radiance, the once playful child ceases to smile through its little dimpled cheeks, to catch with its playful hands, to gaze with its lovely eyes, and to sing its cheerful, broken notes; the eyes become dim, the cheeks pale, and the hands droop; the lips become dry and parched, and the little sufferer expresses itself with a peevish moaning, calling for drink; while the skin is exceedingly hot, especially the head, the palms of the hands, and soles of the feet.

In many instances, there exists an accumulation of phlegm, which invariably accompanies thirst. This phlegm rising in the throat, excites a cough, and the cough producing much irritability, excites difficulty in breathing. These symptoms lead the parents to conclude that the child has got a cold; they, therefore, give a lit-

tle antimonial wine, or James's powder, in the hope that all will soon be well again.

But the excitement of the fever, being unknown to the parents, goes on burning like a little fire put to a great quantity of fuel, until (unless the fire be removed) the whole is lighted up and consumed; for the thirst increases, and instead of moaning, the child screams in great pain, the skin becomes much hotter, and the hands are constantly directed to the head. The white part of the eyes at this moment becomes inflamed, and the whole features partake of a deep flush; the respiration is deep and difficult, because it is rapid.

The head is often changed from side to side, and the child turns quickly from its back to its stomach, rises up hastily, and as suddenly lies down, in one continued restless change of position. The urine is pale; continued efforts made to evacuate it are in vain, as it only drops in small quantities; the little limbs draw towards the stomach, and the infant coils up; the pulse is full, feeling as if the caliber of the artery could hold no more. I must here digress to remark, that no dependance is to be put on the number of times the pulse beats in a minute in a child, because even in the finest health, an infant's pulse is so rapid, that it is often impossible to count the number of pulsations in a minute. The skin is perfectly dry, apparently cracked, and scurfy; the bowels bound, and the stomach hard and large. In this state symptoms increase, and terminate in convulsions.

SECTION IV.

Convulsions.

(See Part III. Section X.)

These are a consequence of the foregoing symptoms. their accession is sudden, while the restlessness is apparently ceasing. The mother imagines that disease is going off, when looking upon her beloved infant, she perceives tranquillity of countenance, and the eyes fixed upon hers; but alas! this is the first sign of spasm. I remember be-

ing called to see a lovely infant about nine months old, in this state. The countenance possessed a lively flush, and a pair of beautiful black eyes were rivetted upon its mother, in whose arms the child lay. If my readers will examine the eye, they will observe in the centre a ring of various colours, which, in medicine, is called the iris, from *iris*, a rainbow, so called from the variety of its colours: in the middle of this is a round opening, called the pupil, from *pupilla*, which is derived from *pupa*, a puppet, because it reflects the diminished image of the person who looks upon it. It is a dark spot, in which we see our own image reflected. In health, this dark spot is very sensible to light, so that when we are in the light, it contracts greatly, or if we move our finger across the eye, it instantly contracts, being sensible to the very least excitement. In convulsion, this sensibility goes off, and this pupil, instead of being contracted, becomes enlarged, and instead of being sensible of any object moving before it, though the finger were to touch the eye, it remains unmoved and without the least contraction whatever. Such was the case with the pupil in both eyes of the child in question, and the child was at that moment convulsed without the knowledge of the parents, who had fondly hoped, perceiving that the infant suddenly remained free from struggle, and quiet, that the disease had stopped.

At other times convulsion commences in the fingers, the hands shutting themselves so that they are not to be opened.

In other cases, convulsion commences in partial squinting; sometimes both eyes will be looking, as it were, in quite opposite directions. It is not unusual that one eye only is fixed; it occurs in rare cases, however, that the whole body is stiff; in other cases, the limbs merely are contracted; in many, the teeth are shut, and firmly fixed, the whole countenance being distorted. But the accession of convulsion is generally known by the eyes becoming fixed, a continued struggling of the limbs in rapid succession, with such an energy and power of the muscles, that it is impossible often to hold the child in

the arms. Indeed, it requires great force to keep the poor little sufferer in its bed. The countenance becomes much distorted, and a discharge of saliva from the mouth generally terminates the awful paroxysm. These convulsions return sometimes every five, or ten minutes, or every half hour, or twice a day, or daily, according to the violence of the fever. Indeed, of all the afflictions of disease, there are none so awful, so lamentably distressing, as convulsions. It is a mercy, however, that a child rapidly recovers from them, or death quickly terminates the apparently agonizing torment. When I say apparent, let it not be supposed by parents that a child is sensible of its sufferings, or experiences pain. I bless God that it is firmly my belief it does not. A lovely little girl of mine died from apoplexy, that is, an effusion on the brain. She was a few minutes before in the finest health, but was attacked in her sleep. After a few hours, she terminated a life which was not to be extended in a world of sorrow, trouble, and sickness, but was to be eternal, in the bosom of the Lamb who had suffered for her. Her existence here terminated in these convulsions. I am therefore alive to the poignancy which parents must feel, if they are not convinced that no pain is experienced. Inquire of any of those who are subject to the convulsive attacks of hysteric or epileptic fits, and they will all say that they are not sensible of pain during the paroxysm. How thankful, then, we ought to be to our merciful Redeemer for this testimony of his rich goodness! I was called to a child, a fine boy of thirteen months old, about seven o'clock in the evening. He was restless, and cried, as if suffering great pain. The poor little fellow screamed, however, on being brought to a room where there was a candle, and was comparatively quiet in a dark chamber. There were no other symptoms of convulsion, but I was confident this was one, and a forerunner of something more violent. My confidence was not groundless. The child in an hour after fell into violent convulsions. I was called to visit a sweet girl of ten months old, who had a violent fever. She had no teeth,

but many were evidently coming through at the time. The excitement was such, that the screams of the child were dreadful; convulsions of the most violent kind ensued, and recurred every two minutes. I was called to see another infant, who was cutting her eye-teeth. One eye was fixed, looking upwards. This went off, but the next day the other eye became fixed. This also went off; but on the third day, towards the evening, convulsions ensued. I visited another, who had had a severe attack of fever. She was nine months old, and had no teeth. Her hands were clenched, and her eyes rivetted, while all the rest of the body was lax and cool.

It will be found an invariable symptom, however, in all cases of convulsions, that the forehead is burning, as well as the palms of the hands, the breast, and the soles of the feet.

I shall here add the sentiments of Mr. Booth, a late popular writer on convulsions of children, who gives the following sensible observations why children are more susceptible of convulsions than adults.

"The great disposition of infants to nervous affections is not to be wondered at," observes this author, "when we consider that the habit of bearing either external or internal impressions is yet to be acquired. 'Every stimulus acts in an inverse ratio to the frequency of its application;' and, until the frail mind and body of the infant are accustomed by habit to have their powers acted upon with impunity, the most hazardous susceptibility must necessarily exist. The muscles during infancy are pale, soft, and fragile; their contractions are quick, frequent, and feeble; and the external surface of the body is endowed with a very high degree of sensibility, in consequence of the nerves being covered only with a very fine thin cuticle. Hence, from very slight impressions arise very powerful effects. The circulation of the blood is very rapid, the arterial pulsations nearly double those of the adult. The capillary circulation is also infinitely more active. The lymphatic system exerts a more powerful influence upon the general economy of the infant than upon the adult. The muscular fibres as

well as the skin is highly sensitive. The nerves are large in proportion to the size of the body. They resemble* medullary pulps. Both the cerebral and ganglionic nerves are much more strongly developed in relation to the body than at any other period of life. The brain is large, and the nerves which proceed from it of a very considerable size. As we advance in years, and the muscular fibres become firmer, our susceptibility to external impressions is consequently diminished. Hence it is, that in proportion as we advance in years, convulsions are less likely to take place. They sometimes occur during the period of youth. In the adult they are rare; and they scarcely ever happen in old age. The sensations of a child are quick, but transient. When any reaction takes place in the system, it is powerful and sudden, and coincides with the general mobility:—motion, indeed, is the language of an infant.

All children are not equally disposed to convulsions. Levret, Mauriceau, Baumes, and other writers, affirm that it may be established as an axiom, that children born with large heads, or whose heads increase in size disproportionably to the other parts of their bodies, will have convulsions. In my own practice, I have seen convulsions occur very frequently in children with small heads. In rickety children, the size of the head is disproportionably large; and from the general symptoms of rickets, it is evident that the head and spinal marrow are considerably affected: the brain increases rapidly in size, the senses are usually very acute, and convulsions are very frequent attendants of this distressing malady. It not unfrequently happens, when some children of the same parents are affected with rickets, that others, who are exempted from this disease, are at a very early age, destroyed by convulsions. The children of parents who marry at too early or too advanced an age, are more susceptible of convulsions than the progeny of those persons who marry in the prime of life.

* A tumour or knot found in the course of the nerves, as in the nerves of the spine.

In conclusion, to illustrate convulsion not preceded by fever, I shall append a description of a very peculiar spasmodic affection, which has been described by Mr. North, in the London Medical Journal, and by Dr. Johnson, in his Medico-Chirurgical Journal, from the 6th vol. of which work this interesting information is derived.

"The premonitory symptoms occur at an uncertain age—generally, I believe, between the third and seventh month. At first, they may not be sufficiently striking to attract the particular attention of the friends, although the practitioner, who has had opportunities of watching the progress of similar cases, might, with much confidence, predict the series of symptoms which is yet to be developed. Each time the child wakes from its sleep, the breathing is for some moments unusually accelerated, and is accompanied by such a kind of noise as would be caused by an increased secretion of the mucus of the aerial passages. If the little patient has previously enjoyed a good state of health, the characteristic rotundity of features observable in the infantile state, will quickly undergo a remarkable change. The countenance soon becomes anxious; the sides of the nose are drawn in; the face is pallid and emaciated. When put to the breast, the child sucks greedily for a moment, but suddently ceases to do so, and frequently throws back the head, which remains rigidly extended for some time. Whatever may have been the previous condition of the bowels, they now become constipated.

"This state may continue for a very uncertain time, without any remarkable alteration: the following symptoms, however, are gradually added to those above enumerated; they occur irregularly. A convulsive affection of the hand is usually the next morbid sign which excites attention. The child's thumb will be found constantly and firmly pressed upon the palm of the hand. The wrist and ancle joints are bent rigidly inwards. The head is now almost constantly thrown backwards, keeping the anterior muscles of the neck upon the stretch. The inconvenience the child suffers, when he wakes, is no longer

confined to a mere acceleration of the breathing. This symptom still continues in an aggravated degree; but the noise accompanying the respiration has gradually assumed a very different character from that which marked it at first: each respiration is now attended by a loud crouping noise, which might be heard in an adjoining apartment. The child has frequent attacks of convulsion, during which the features are much distorted. These convulsive paroxysms vary in violence and in duration in different cases; sometimes the whole body is affected. In the child of a Mons. Lambert, in whom the convulsions were frequent and severe, the state of opisthotonos* was so complete, that for many days the head and heels were the only parts which touched the bed: if, with difficulty, this apparently painful position was altered by the mother, it was quickly resumed. The brow of the child is generally knit. The anxiety of the countenance is extreme. There is no febrile action in the system to be detected. No determination of blood to the head is manifested, either by an increase of heat, or a flushed countenance.

"I have known the firm contraction of the thumb, the rigidly bent position of the hand and foot, and the crouping noise in respiration, continue for many weeks without intermission. The child sometimes appears lively; its countenance will be animated by a momentary cheerfulness; but it almost invariably awakens from its slumbers, however tranquil they may be apparently, with a convulsive paroxysm, similar to that which I have described. The paroxysm having terminated, the child appears much exhausted, and almost motionless for some time. Dr. Clarke observes, that the term of chronic croup has been sometimes applied to this affection; 'but it is very different from croup, and is altogether of a convulsive character.

"In all the cases, the age was between six months and two years—consequently within the period of dentition."

* A spasm which keeps the body rigidly bent backwards, from the Greek *backwards*, and *to draw*.

Dr. Johnson, in the volume before cited, has related a case, which appears to have been an exquisitely marked one of this peculiar affection; and, as it is short, we shall cite it.

"The patient was a delicate female child, nineteen months old, and cutting three or four teeth at the time. She had been ill eight days before the reporter saw her; but, according to the mother's account, there was little or no variation in the symptoms all the time. When first seen, the child three or four times in the hour was seized with spasmodic affections of the respiratory muscles, consisting of repeated attempts to fill the chest, during which she threw herself back, as in opisthotonos, and appeared as though she would be suffocated. These fits would last ten or twelve minutes, after which the child was somewhat easier, but always fretful and peevish. The backs of the hands and insteps were swoln and hard. The thumbs were rigidly contracted, and locked across the palms of the hands. The toes were bent down towards the soles of the feet, and both wrists and ankles were rigidly bent by the flexor muscles, and kept permanently so. The little patient could take no food; she was slightly feverish; the bowels torpid; and the stools clayey, slimy, and offensive. The eyes looked very heavy and inanimate. The child extremely irritable and restless both by day and by night."

These are undoubtedly idiopathic affections. But to return to the termination of the fever: should it go off in any other way than in convulsions, the febrile symptoms are different to the description I have given under the head of fever. The other termination is in purging.

SECTION V.

Purging.

(See Part III. Section xi.)

This prevents that extreme hot skin I have described, lessens the excessive thirst, the great suffusion about the eyes, and the parched, dry surface. Indeed it is the grand effort of nature to carry the disease off by the bowels;

but such is the irritation and excitement in the constitution, that unless this determination is watched, assisted, and moderated, the purging, which in one way would be beneficial, in another becomes a serious and very alarming disease. The evacuations are at first very loose and frequent, being about four and five times a day, and if they are not of an unhealthy colour, are highly favourable; but if they change colour, they become green, intersected with mucus, a matter which is similar to the excretion from the nose during a cold. The child will be passing, with much difficulty and straining, its dejections of this kind, seven or eight times a day, and as many times during the night. The limbs of the infant will be continually drawn up to the stomach, from the excessive griping pain under which it every moment suffers; but more especially every time the bowels are moved. The little patient suddenly becomes exceedingly weak and reduced; and from being a very stout, fine child, is reduced, in two or three days, to what is generally called, a *mere skeleton*, and the common belief is, that "it is impossible—utterly impossible the poor dear child can live, as never such an object was seen." "Indeed," says one, "it would be a mercy if the poor thing were relieved from its sufferings, for certainly it is nothing but skin and bones." Another lady will observe, "Well, I always thought that the way that poor child was brought up was bad." "Oh," exclaims a third, "it is all owing *to the arrow-root*." "Indeed," a fourth will remark, that in her eyes, "the poor little thing always had a deformity in the head." A child, however, with this complaint, almost invariably recovers, if it have but ordinary good management; and the recovery becomes one of those blooming laurels to the medical man, which establishes his character for ever in the minds of the parents. "Oh! I assure you, with children he is the most clever man in the world: indeed my dear little Charles was on the very brink of the grave; at death's door in fact; a most pitiable object, the wonder and astonishment of the whole station; so wretched in appearance; every rib and bone could be counted, and seen; rejecting all nourishment, and yet his bowels were moved every minute, and as green as

grass; I was up day and night, as he was screaming the whole time without ceasing; his eyes were actually sunk in; the cheek bones almost came through the skin, and his dear face the most distressingly haggard to be conceived; yet dear Mr. A. actually restored him, as if one had risen from the dead; actually a miracle! Mrs. So-and-So's little Charlotte was in the same state, and under his skill she likewise recovered; and Mrs. Thingembob's little boy was supposed actually to be dead several times, being so reduced; yet by his great and extraordinary attention and ability, actually recovered, and is now, with my own and Mrs. So-and-So's, the finest, healthiest, loveliest children you ever cast eyes on." True it is, that children do make these wonderful recoveries, when the irritation of teething effects a purging; but it is quite the contrary when the irritation brings on fever, which terminates in convulsion; for in this latter case, a child is attacked and dead in a few hours, if the greatest care is not always paid to diet, and the bowels. We shall find a mother drawing a very different picture of the medical man who attends on these melancholy occasions. "Oh! if you love your children, never employ him! Indeed, before he attended on my poor sweet infant, I reposed the greatest confidence on his talents and abilities, and from my own opinion, and the general report of his merits, I held him to be the cleverest man in India; but how miserably have I been deceived, and how much I lament the day on which he was first recommended to me! I am credibly informed, indeed, that many children have died under his hands, precisely in the same way; and if I am not very, very much mistaken, all children will share the same fate, who have the misfortune to be put under him. It is a pity, poor man! for he is exceedingly attentive, and moreover kind and obliging; but certainly he knows nothing respecting the treatment of children. Had he only given a little more castor oil, or Dalby's Carminative, or used Mrs. Johnson's Soothing Syrup, I fully believe the child would have recovered; but he gave the child nothing but calomel, enough to poison the poor thing; and lanced the gums, so that it

was enough of itself, to drive the dear sufferer into convulsions. I really am fully persuaded, now the thought comes across me, that the lancing was the fatal cause, aggravated by continually plunging the poor little thing into that nasty hot bath, enough of itself to drown a man, but more so a child."

Such are the unhappy and melancholy sentiments of the afflicted mother, towards perhaps one of the most skilful of the profession. But the fact is, the treatment was good, and a disease is easily prevented; but not so easily cured. All the mistake lies with the nurse. Generally, she is not doing that which is preventive. A ship cannot be saved by the most skilful master, when she is sinking; but she may be, when afloat, by contrivance and art. If a mariner be called to save the ship in the former state, and the ship be lost, the blunder is not his. I was told by a gentleman, that his lady had been very successful in rearing her children; and she was informed by her medical attendant, that the reason of this was, because she had always, previously to his being called in, paid great attention to her children's bowels, and moderated their diet; she had, therefore, invariably commenced the work, and left to him merely the pleasure of finishing it, which was done without difficulty, as she had by her intelligence removed the danger. Such, then, are the effects of purging; but another effect still more beneficial ensues, which prevents the accession of fever, and that is eruption.

Section VI.

Eruption.

(See Part III. Sect. II.)

In some instances, an infant's face and hands are covered with large red blotches; and servants are apt to exclaim, "Oh, Ma'am! it is nothing but the rash of the teething!" when in fact it is nothing but the bites of sand-flies, musquitoes, and red ants; nothing but this great negligence of the child's attendants, who do not carefully

remove all these insects with a chowree or towel from the curtains, or properly tuck them in. When we contemplate the delicate texture and nervous sensibility of an infant's skin, it needs a parent's continual watchfulness to prevent the poor infant from becoming a sufferer from such cruel inattention. Every one is sensible of the unpleasant itching and pain of a musquitoe-bite; what must it be then to a poor child!

By drawing these comparisons, we shall understand that rule, to do as we would be done by; and if we follow that precept, our children will escape these painful accidents.

Eruptions put on various appearances; and although medical pathology has a name for each, yet they are all of the same parent, that cruel tormentor teething: even as the children of one father differ from each other in appearance, make, shape, and height, so do the eruptive offspring of teething vary in the same way. In one child, the skin is occasionally suffused with large red blotches; the eye-brows, the palms of the hands, and sometimes the arms, legs, and frequently the body, are affected in the same manner: at other periods, these blotches appear on the cheeks, giving a most beautiful colour; the skin cracks, and is quite rough like a boil, and then peels off: frequently this suffusion comes all over the body, once or twice a day, and then goes off again. Various conjectures are made by mothers, nurses, &c. on the nature of this eruption; and often the former will exclaim, "Oh! I am quite convinced, it is nothing less than the scarlet fever: no, not all the doctors in the world would convince me to the contrary. I tell you, Sir, the whole body is covered with a scarlet tinge, and the child is quite warm and restless; now, if that is not scarlet fever, I know not what is."

Another will declare, "It is positively Saint Anthony's fire, even to a tittle of Dr. Hamilton's description of it; and surely, Sir, Dr. Hamilton is sufficient evidence: if you doubt, see what Dr. Reece and Buchan say on the subject; why, that Saint Anthony's fire is quite red, to be sure: if you press the finger upon the spot affected, a

white ring all around will appear—can any thing be plainer? I am really astonished, if you do not agree that an eruption all over the body, as red as fire, is that alarming disease—that dreadful affliction."

Now this eruption is not followed by injurious consequences; it is a grand effort of nature to throw all the blood to the surface of the body, and is a certain preventive of fever.

Another species of eruption breaks out in large scabby blotches on the head, about the size frequently of the top of the finger. They appear inside and at the back of the ears; spread all over the forehead, extend to the back of the head and neck, and are exceedingly annoying to the child, as it will be for ever scratching the head, and frequently be kept awake during the night; they often come out in large clusters, and run one into another, till they discharge a thick, glutinous, yellow matter*, which becomes so corrosive as to take off the whole skin of the head, and to leave nothing else but one sore surface. The child, both day and night, is in a continued state of irritation. The scab adheres to the head, so that the very act of separating it is a tedious and painful process. The matter emits most offensively, which is not only distressing to the infant, but also to the attendant. There is another eruption, however, which appears on the head: a pimple, the size of a pea, breaks out, and forming into thick matter, concretes into a kind of scab; this at length spreads all over the back of the head and behind the ears; it is not, however, painful to the child, as it is the reverse of being virulent†. The child is in perfect health with it, and in good spirits. It is a counter irritation, which prevents difficult dentition.

The third eruption breaks out in several little pimples like flea bites, containing a limpid fluid‡, and principally attacks the body, then the arms, legs, and lastly the face. Nurses deduce this to be the chicken-pock "without doubt," believing it to be merely the small-pock in miniature, and if it is not immediately remedied, a violent fever

* Plate VI. † Plate VI. Fig. 2.
‡ See Plate III. Fig. 3.

will ensue; for according to family-physician writers, it often terminates in the death of the patient. Much alarm arises in the mind of the mother, lest it be the variolous epidemic, which of late years has made such a noise in the world.

The red gum* is the next eruption which comes within our notice. The papula of this rise sensibly above the level of the skin, are of a vivid red colour, and commonly distinct from each other. They appear ordinarily on the cheeks, fore-arm, and back of the head, but are sometimes diffused over the whole body: the papula are in many places intermixed with red patches, which does not however raise the skin. A child's skin being thus marked with various colours like printed linen, the eruption was formerly called the *red gown*, a term which is still retained in several counties in England, and may be found in old dictionaries. Medical writers have changed the original word for one of a similar sound, but not more significant. The French call it the *efflorescence benigne*. The term is expressive; the eruption is favourable to teething.

The fourth kind, and most common eruption, is a light red, scabby scurf, breaking out about the mouth, cheeks, nose, ears, ends of the nails and toes, along the legs, arms, and body†. It commences as if the child had a very severe cold, with a running and agglutinating mucus from the nose, so that the nostrils are often quite choked up. The same takes place from the eyelids, and corners of the eyes, so that on a child awaking in the morning, its eyes, nose, and mouth, are almost all blocked up; and the infant makes powerful efforts with its little hands to rub this extraneous matter away, to regain the use of sight, smelling, and tasting. This eruption often commences in large patches close together, exceedingly red and angry, but only in appearance, exciting an irritation very much like prickly heat all over the body. The mother refers to Reece, Buchan, or Hamilton, and finds the description of the measles, exactly corresponding. The medical gentleman, entering

* See Plate II. † Plate III. Fig. 1.

PL. II.

the house at this moment, remarks nothing but solemn whispering, gloom, and gravity pervading the whole family, as if some dreadful catastrophe had taken place; but the secret is soon let out of the bag. The mother, commencing with the signal of her finger on her lips, commanding perfect secrecy from her medical friend: "Indeed, my dear Sir, my poor little Amelia has got the—Oh dear! what *shall* we do, if it should be known?" The medical attendant, unaccustomed to these frights, begins to imagine the child has got that unpleasant disease which is called the itch, and naturally interrupts by putting the question. "The itch, Sir! dear me! Mr. What's-your-name, how could you imagine such a thing! such an idea, indeed; I am quite shocked that you could suppose, that you could imagine a child of mine, Sir, should be affected with so filthy, such an uncleanly disease! No, Sir, my dear little Amelia has got, I grieve to say, the measles, and what to do I know not, for you know it is infectious; and if Mrs. Thingembob was to hear of it, she and her whole family would fly a hundred miles to escape the danger of being within the range of the infection; indeed, I know not where it will stop, as I am confidently told, when the disease once appears, it goes through the whole station; and as to what I shall do with my poor little Toony, that's the question! now come and see the poor little infant." Of course, it proves to be all that is desirable in teething; the eruption of these discharges from the constitution, which is the grand preventive of fever, and as totally unconnected with measles, as the medical gentleman is by birth with the king of England. These are the ordinary effects of teething, and preventive of fever; but when the fever actually takes place, and is particularly severe, it not unfrequently terminates in what is commonly called water in the head.

Before I proceed to treat of that affection, I must state, that various are the appearances and terminations of eruption which take place on the skin. After a slight inflammation, or any irritation on the skin, they are like scurf*. When the skin has been much diseased, then

* Plate I. Fig. 1.

they are in the form of scales*, hard, thickened, whitish, and opaque, and often increase into irregular layers†. At other periods, they terminate in superficial coverings over concreted matter, exuded from ulcerated surfaces in the form of scabs‡. Eruptions not unusually assume the appearance of little red specks, without any elevation of the skin; they are distinct and apart from each other: in this form they are called professionally Stigmata, (from the Latin *stigma*, I presume, a mark;) but when they coalesce, and assume a dark and a livid colour, as in bad cases of fever, they are termed Petechiæ§, from the Italian *petechio*, a flea bite, because they resemble the bites of fleas. There is another species of small elevations of the skin, with an inflamed base, which neither contain a fluid nor lead to suppuration: these are called Papula ‖, from the Latin *papula*, a pimple, blister.

Besides the foregoing, there are eruptions called a rash or Eranthemata¶, (from the Greek, to spring forth, or bud,) which are generally the sequelæ of fever, &c. These consist of red patches on the skin, variously figured, in general confluent and diffused**, and irregularly spread over the body, leaving interstices of a natural colour. Portions of skin are often elevated in a rash, so as to give the sensation of an uneven surface; they terminate in a few days by the skin peeling off. There are often permanent discolorations in the texture of the skin, without changing the texture, or connected with any disorder of the constitution. This affection is called Macula††. The word is derived, I should suppose, from the Latin *maculo*, to stain. Freckles on the skin are thus professionally named.

Besides these, the internal organs of the body are subject to hard superficial tumours, circumscribed and permanent, or proceeding very slowly to suppuration; these often occur on the lungs as well as the liver: they are represented‡‡. These are termed tubercles.

* Plate I. Fig. 2.
† Ibid. Fig. 3.
‡ Ibid. Fig. 4.
§ Ibid. Fig. 5.
‖ Ibid. Fig. 6.
¶ Ibid. Fig. 7.
** Plate V. Fig. 2.
†† Vide Plate I. Fig. 8.
‡‡ Plate I. Fig. 9.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

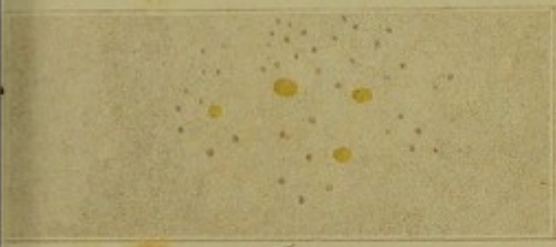


Fig. 5.

Fig. 6.

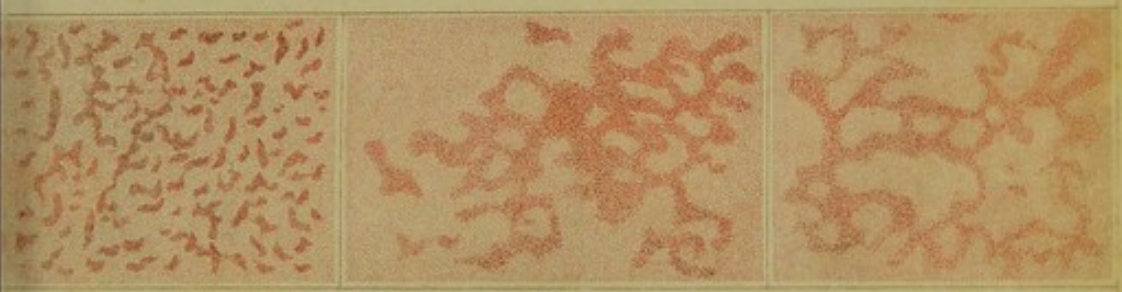


Fig. 7.

Fig. 8.

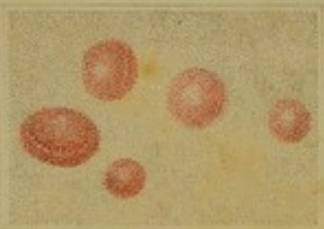


Fig. 9.

Fig. 10.

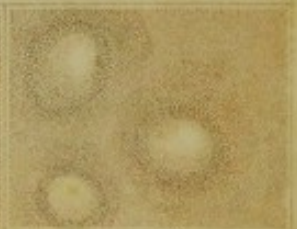


Fig. 11.

Fig. 12.

Fig. 13.
Pustule
with Scab.

Fig. 14.

Fig. 15.

Fig. 16.

The skin is subject to vesicles, or small orbicular elevations, containing a pellucid limpid liquor: at other times, the fluid is opaque, white, or pearl coloured*.

It is not unusual, when the fluid is discharged from the above vesicles, that an excoriated surface is exposed, covered with a flat, yellow, or blackish scab, which remains until a new skin is formed underneath; these are professionally termed Balla, being the Latin for a bubble or vesicle: such elevations are produced by scalds or burns†. There are likewise elevations of the skin with an inflamed base, terminating in suppuration and scab, as in small-pox‡; these are called pustules.

Minute pustules sometimes appear, and are confluent; whence a thin, hot, limpid fluid exudes, as in erysipelas§.

There are likewise acuminated pustules, containing a straw-coloured matter, having the appearance and nearly the consistence of strained honey. They appear most frequently about the head, and are succeeded by a thin, brown, or yellow scab‖. Such are the various eruptions which appear on the human body in infancy. We will now proceed to treat of Hydrocephalus.

SECTION VII.

(See Part III. Section XIII.)

Hydrocephalus, Effusion on the Brain, and Erethism on the Brain.

An effusion of watery fluid on the brain, which takes place in consequence of inflammation in that part; it is also often in consequence of inflammation of the stomach and bowels, and indeed, too frequently, the consequence of overloading the stomach and the bowels with many kinds and great quantities of food.

* Plate I. Fig. 10.
† Ibid. Fig. 11.
‡ Ibid. Fig. 12.
§ Ibid. Fig. 13.
‖ Ibid. Fig. 14.

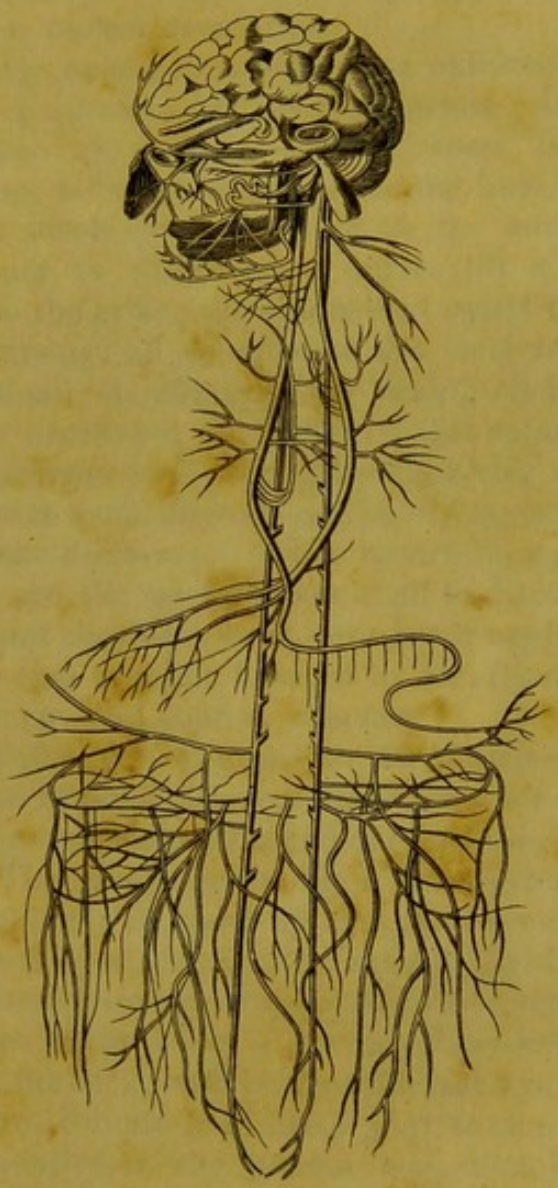
These affections are rarely understood. I fully believe, that it is so much the common opinion that every affection of the brain in an infant, is to be imputed to its being full of water, that were I to adduce indisputable proof to the contrary, it would be disregarded. To say there is no water in the brain, would be incorrect; for there is a certain quantity, even in a healthy brain.

M. Magendie read a paper at a late sitting of the Royal Institute of Paris, on this fluid found in the cranial and spinal cavities of man, which he calls the Cephalo-Spinal fluid. He estimates the quantity of this fluid, which he found to vary in the adult and healthy subject, to be from two to five ounces. Its use is to preserve in a proper degree of plenitude the cavities of the cranium and spine. In old age, the shrinking up of the brain and spinal marrow causes a greater space for the accumulation of this fluid. It is this eminent physiologist, who has likewise proved the existing communication between the lateral and other ventricles of the brain, and between the latter and the cavity of the spine. M. Magendie confidently believes, that in all morbific affections of the brain, as in Hydrocephalus, this communication is increased. The increase of the fluid from debility or age is therefore proved; and I do declare, from my own knowledge, that scarcely a child dies of the most common fever without effusion; but this is actually set down as an idiopathic disease, or in other words, water in the head.

But besides an overloaded stomach being a cause of effusion*, it may call forth the surprize of my readers, when I mention, that I am decidedly of opinion, that injury in the spinal marrow has also the same effect; and what in ordinary cases is set down "unequivocally" to hydrocephalus, or water in the head, is nothing more than an injury in the spinal column, now exhibiting itself on the sensorium. I have appended a plate† to show, that the

* Vide Plate XI. which exhibits the connection of the nerves of the stomach with the brain, to show that, if the former organ is loaded and irritated, how incontestable the fact is, that the brain must become instantly affected, and that doubtless one of the principal causes of effusion and determination to the infant brain is over-feeding.

† Plate X. Fig. 4.



spinal marrow is, as it were, the trunk of the brain; the part which is exhibited* about the loins is one mass of nerve: yet so regardless are parents and medical men of this anatomical fact, that no attention is bestowed upon this spot during the accession of disease, or in the means adopted for topical prevention.

The early period at which some children are raised from the *goodree* to the sitting posture; the mode by which they are usually carried, their limbs being cramped up, as before mentioned in the First Part of this work, the whole pressure being on the loins; the hurried manner in which some nurses lift a child from its cot into the arms; the strains and twists they receive in bad nursing, all conduce to this local derangement, and terminate in affecting the brain. It is true, but not to be accounted for, however, that spinal disease is very progressive and slow; therefore, let not parents suppose that such diseases are known by an immediate symptomatic discovery. I can assure them, that spinal affections are the most difficult of all to discover, and on that account they have been very much neglected. The following case brought forward by Mr. Lawrence of St. Bartholomew, will confirm this fact.

"On Wednesday, August 17th, Mr. Lawrence brought an anatomical preparation to the hospital for the purpose of showing it to the pupils, and of explaining its previous history. The case had been one of considerable duration, but not having been under his care, he was only acquainted with its general history. The child, at the time of its decease, was twelve years of age; about five years previous, it had been affected with a tumour of considerable magnitude in the neck, with evident fluctuations, and of size sufficient to contain from half a pint to a pint of fluid. The peculiarity in the tumour was, that on pressure being applied, a complete state of coma† was produced; at other times the child enjoyed a perfect state of the functions of the brain. The symptoms at the time were sufficient to cause the medical men attending, to suspect

* Plate X. Fig. 5.

† Preternatural desire to sleep.

it a case of hydrocephalus, and the fluid contained in the tumour to be connected by some extraordinary communication with the brain; this was sufficient reason to prevent them from puncturing it. After some time, however, the tumour entirely disappeared, and the child in a great measure recovered its health, and went into the country. After a laspe of between two and three years, the patient having entirely recovered from the former complaint, the lumbar vertebræ* were obsered to give way and become distorted; and at a later period, a tumour appeared in the groin, in the situation of a psoas† abscess; this was opened, and two or three pints of matter discharged; the child eventually died from exhaustion.

"Previously to explaining the preparation, the pupils were desired to remark, that during the whole five years there had not been the slightest paralysis of any of the members—that the child had enjoyed the full use of its mental faculties, and that the head itself had retained its relative situation with the occiput‡; at least it had not been perceptibly changed."

But besides such morbid derangements of the spine as the foregoing exhibits, I am satisfied that the cause of epileptic and hysteric paroxysms will be found, if properly traced, very often in some part of the spinal column.

But to return to the subject of this section. At this period of constitutional irritation, which terminates in fever, instead of eruption and purging, effusion ensues§, arising from an inflammatory affection of the brain, and is not that disease, dropsy, for which it is so often and so erroneously mistaken.

How familiar to my ears are the desponding accounts of poor dear Mrs. So-and-So's sad misfortunes on account of that dreadful, unhappy, melancholy, hereditary disease among her children, by which no less than three lovely babes successively have been carried off, at the interest-

* The spine at the small of the back.

† From the Greek signifying the "loins," because the abscess is situated in the loins.

‡ Bone at the back of the head.

§ Vide Part III. on the opinions of Rush, Cullen, Beddoes, &c.

Explanation of Plate X.

Fig. 1st. represents the brain. It is a round or spherical body, on which account the two parts which divide it (A) according to its length are called hemispheres, which word is derived from the Greek, a ball or sphere. They signify half the globe, when supposed to be cut through its centre; and are also called the lateral portions of the brain, and are divided into the right and left hemispheres, B B. This mass fills the whole cavity of the skull, and is covered by a strong parchment-like membrane called the *dura mater*, from *durus*, hard, and *mater*, a mother, being the supposed source of all the other membranes. Immediately next the bone is a thinner membrane called the *pia mater*, signifying the natural mother, because it embraces the brain as a good mother enfolds her child. The upper portion of the brain (A Fig. III.) is called the *cerebrum*, from the Greek, meaning the head; the under (Fig. 6, B) is called the *cerebellum*, signifying the little brain, which portion continues down to the spinal marrow. The brain is distinguished into two substances, the one external, the other internal: the former is called *cineritious*, or *cortical*. The former term is derived from *cinis*, ashes, from its resemblance to the colour of burnt ashes; and it is called the latter from its being of a darker colour than the internal, and surrounding the medullary substance as the bark does the tree. On the surface of this substance we observe several singular furrows, whose convolutions are similar to those of the small intestines, Plate V. A A A.

Fig. 1.

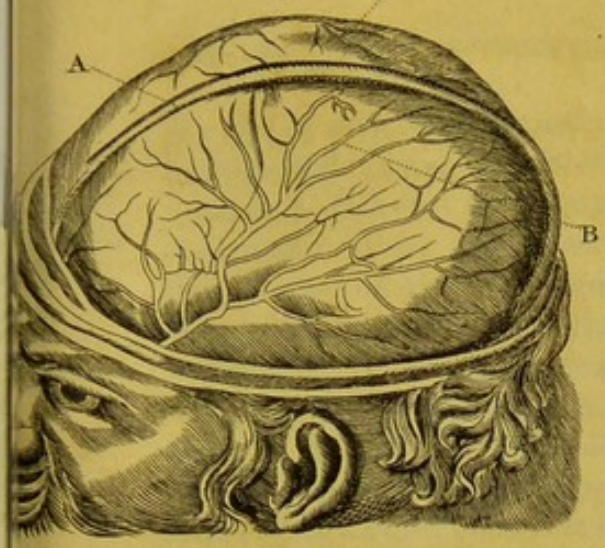


Fig. 2.

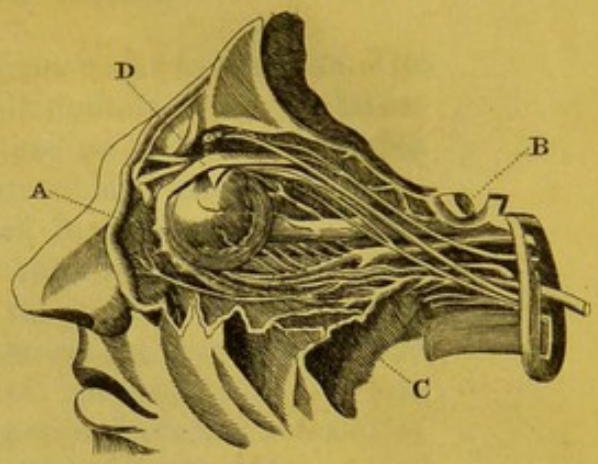


Fig. 6.

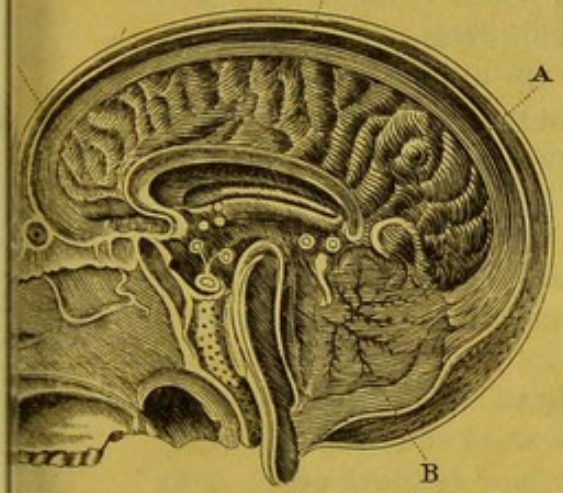


Fig. 4.

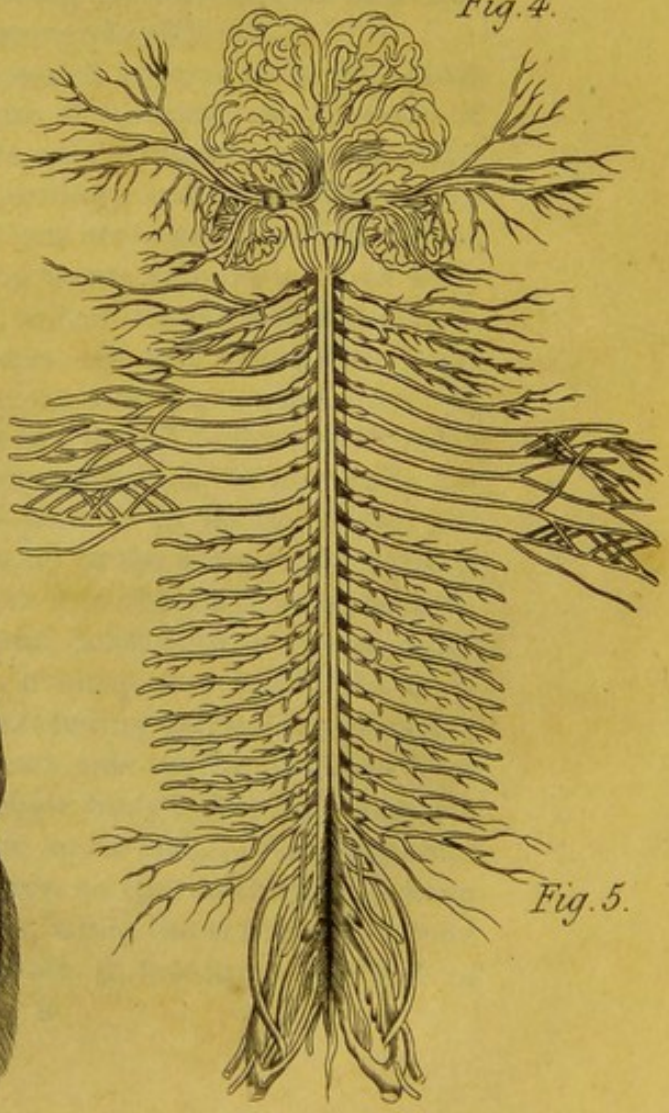
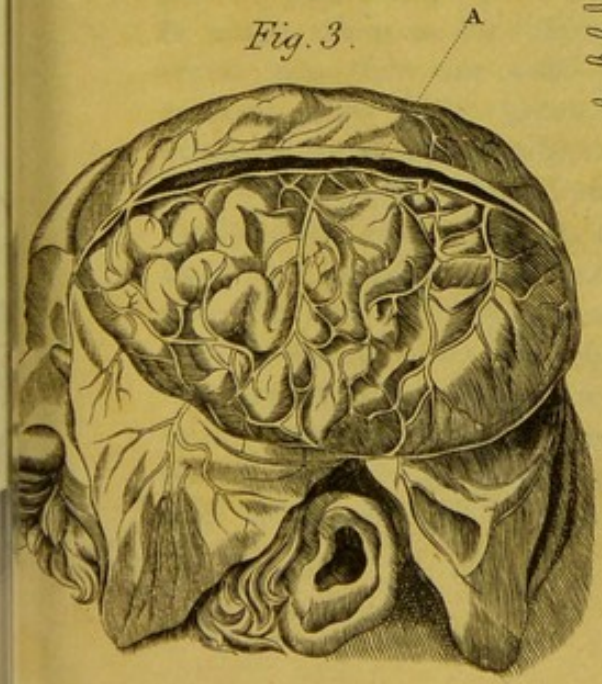


Fig. 5.

Fig. 3.



ing age of seventeen months, from water in the head. The innumerable instances which all mothers know of families with this dreadful visitation, lead us almost to conclude that water in the head is as prevalently mortal as dentition itself; so that the remark is common, "What an extraordinary large head that child has got!" (and then whispering to a friend, that the mother may not hear,) "Did you ever see such an enormous head! Poor dear thing! there is no doubt of it! How I pity its poor parents!" Now if these unhappy persons have had the misfortune to lose a child before, it is astonishing how the eyes of their friends magnify the heads of every succeeding child. Children at the age of seventeen months appear to have heads particularly large, because it is at this period their eye-teeth are protruding, which naturally lessens the proportionate bulk of the limbs, in consequence of irritation. It is thus this appearance is effected.

This period also is that, which we may term the most irritable and dangerous time of teething, on account of the eye-teeth. It is the most irritable, because a child has become sensible, discerning, and consequently, on account of pain and irritation, cross and peevish. It is at this moment that a child wants to have its own way, and will cry and fret itself, unless coaxed and humoured. So that it demands to be taken out into the cold air, and then to be brought back again into the warm house. It insists upon being put in a warm bed, and when the skin is moist, then to be taken out again. It now calls for warm tea, then for cold water; to be laid upon the ground, then to be taken up in the arms; and various other changes, which subject it to checks of perspiration, as well as to fever and determination to the head, especially if the child is stout, healthy, and florid: the forehead and temples burn; exceeding thirst; dry tongue; and the two arteries on each side of the forehead beat with great fulness; the whole body is hot and feverish, but the eyes especially are quite red, protruding, and wild: restlessness takes place, so that nothing can keep the child in any one position, while the screams are loud and continued, and terminate in moaning: the heat of

the skin goes off, and a moisture stands in drops upon the forehead, back of the hands, chest, and feet; the fulness of the pulse, also, decreases, and the redness of the eyes disappears; the wildness changes to a dim languor, and every symptom ends in drowsiness and lethargy.

To make this malady perfectly explicit, I shall digress to mention, that before a limb mortifies, it is inflamed; during the inflammation the pain is violent; but no sooner does mortification take place, than the pain and inflammation cease.

In inflammation of the liver, for instance, the pain is most deep and excruciating; but no sooner does an abscess form in the liver, the effect of the inflammation, than the pain ceases. As the abscess, therefore, is the consequence of the inflammation of the liver, and takes away the pain, so is the effusion of water on the brain the consequence of inflammatory fever, and takes away pain, fulness, and all the symptoms which I have described. This is what is usually called "water in the head;" yet this very same effusion often at the same time takes place in the stomach and bowels*.

Some may urge, that the hot skin, full pulse, and inflamed eyes, are not always the precursors of this effusion on the brain, but that the skin is often all along cold and clammy; on this account the danger is greater, because the blood has determined itself to the internal parts, rather than to the surface; which makes the effusion greater, and the danger inevitable. Or no effusion takes place, and the child dies from the distension of the blood vessels on the brain†.

Let me, therefore, remove that distressing anxiety from the minds of those who have had the great misfortune to lose children by water in the head, arising from its having been, as they are told, a family, hereditary disorder. The fact is, some parents have stout, healthy children, who, from bad management in feeding, are predisposed to inflammation, which, attacking the head,

* Vide Part III. Mr. White on cases of Hydrocephalus.

† Vide case by Dr. Stocker, Part III. Fig. 1. Plate X. exhibits the vascularity of the brain, and vessels in a state of distension; and Plate XIII. Fig. 2, shews the course of the vessels to the head.

effects death. This inflammation can always be guarded against with care and attention; and if the parents of such children will only observe the rules laid down in this work, I have not the least doubt but they will find this water in the head an effect, not a cause, and with the will of God all will do well. If it be the Lord's will to take, who shall withstand? He is almighty, as well as all-merciful.

I do not mean to deny, that there is such a disease as water, or as it is termed, dropsy in the head; most undoubtedly there is, but it is a very different disease to that which is generally so called. In dropsy of the brain, there is no mistaking the deformity and unnatural size of the head, for it is often enormous*, never accompanied with fever, or in fact any acute symptom: consequently, instead of its being rapid in commencing, and terminating in death, as is the case in this effusion alluded to, it is often of long duration, sometimes continuing for years together: children are frequently born with it†, or the water forms before the ossification of the scull is complete; so that the water and the size of the scull adapt themselves to each other, there being no repelling force against the accumulated fluid. The brain, however, eventually is nearly destroyed by the fluid‡, so that when examined after death, it is merely a sack or bag, containing a watery fluid; and in this state even patients retain their senses almost to the last moment, as well as some of the faculties and powers of the mind. How contrary then to all reason, to suppose a small effusion should cause instant death, when the brain itself nearly annihilated will not do so!

This latter disease I call idiopathic, where there has been no previous indisposition nor inflammation discovered; and when the disease progressively goes on, for weeks, months, and years in this state, it is not irremediable, as they will see by the cases I have appended in Part III§. The prevention of effusion in the brain, during dentition, is also almost invariably within the reach of medical skill.

* Vide Part III. Mr. Millar's case, as well as those of Dr. Sym's and Dr. Vose's.

† Part III. Cases.

‡ See Part III. Millar's case.

§ Dr. Vose's case.

I regret to say, the prevention of dropsy is not so, but it may be cured. Let us therefore not hastily pass over the true nature of effusion, as I believe a child during teething rarely dies without more or less of this effect being first produced. I am desirous of drawing my reader's attention to the cause of this effect, how it is induced from obstruction, which is too often formed either from over-feeding, inducing inflammatory determination to the brain, or from check of perspiration, or from, which is ordinarily the case, the excessive heat which prevails during the hot season in India.

To show how the obstruction ensues, it has been proved by experiments made by Lower, that an effusion of a fluid into the stomach of a dog was occasioned in a few hours by tying what is called, in anatomy, the vena portarum, the great vein already alluded to, which is situated at the entrance of the liver, one of the most important vessels in the body, as it conveys the blood from all the bowels or viscera, &c. into the liver. This vein makes a beautiful ramification through the liver, affording, by this means, a sufficiency of blood to form the bile. On the due performance of its office, the health of the whole constitution depends; for if there exist the least obstruction in this vessel, the whole circulation of blood from the bowels is prevented, and there is, therefore, not only a great quantity of blood remaining in all the viscera, but in every part of the body, especially in the head, on account of the channel of circulation being blocked up. Effusion of watery particles is a consequence, therefore, of this obstruction; for it immediately took place in the abdomen of the dog, on tying this vein. It was found by the same gentleman, that tying the large vein of the neck of the same animal produced a dropsy in the neck and throat.

Let it be understood here, that the office of this vein is to carry the blood from the brain; so that we find effusion the consequence of this obstruction. But to be more explicit: my readers are acquainted with the fact, that their feet swell towards the latter end of pregnancy. This circumstance is merely a similar effusion from the

pressure of the womb on the large veins which run close under it. This pressure, of course, prevents a free return of blood from the limbs, and occasions that swelling, which goes off the instant the child is born, because the obstruction is then removed.

Before we go further, let us ascertain whence this water comes. By looking at meat, it will be observed, that the fleshly parts are connected to each other by a kind of honey-comb, by which means the skin is attached to the flesh. To preserve this in a soft, moist state, a watery fluid is emitted from the ends of the arteries; but when this watery fluid is in superabundance, the veins take it up, and carry it back to the circulating mass; and it is discharged by perspiration, or by the urine. Now if these veins are obstructed, of course the water must remain. Thus then the cause of obstruction is the cause of this effusion; for it is an acknowledged fact, that dropsy in the body is in consequence of an obstruction of the venous blood in its course to the heart.

If obstruction take place, a large quantity of blood is accumulated in the bowels, stomach, and head; this produces considerable heat, running into inflammatory fever, and terminating in this effusion, which is a cause of very sudden death*. This effect, however, is not the same in dropsy originating in the head; as in this case, there exists only obstruction, as in long continued fevers, liver complaints, &c. which increases gradually until it becomes complete, and the fatal effects of all the kinds of dropsy are evidenced.

It is in this manner, the formation of water in the different parts of the body takes place. Though we draw off the water from the head, a cure will not be effected, but the water will re-accumulate, because the obstruction is not removed†. We must, therefore, instead of using a Trocar only to draw off the water, apply another power to remove the obstruction.

But the question follows, where is this obstruction, and of what character is it? It may readily be conceived,

* Part III. Maxwell's cases.
† Part III. Dr. Sym's case.

from my description of this affection, that hydrocephalus, as it is termed, ought properly to be divided into two diseases, namely:

First, effusion; and second, dropsy of the brain. One sometimes is idiopathic*, the other always symptomatic†. And although I acknowledge that both may proceed from obstruction, still, inasmuch as the diseases differ, so likewise do the causes of the obstruction: for instance, the first is from effusion on the brain, arising from obstruction produced by congestion in the blood vessels. The second from dropsy of the brain, arising from obstruction produced by visceral or glandular enlargement.

To explain the first: the effusion by congestion, is that state of the arterial circulation, where there has been violence of inflammatory febrile affection, where the pulse beat with fulness, and the skin burned with heat—a state which the animal powers could not support beyond a few hours, as they became exhausted, and terminated in what is called a collapse or congestion; that is, the blood ceases to circulate in the small capillary vessels, as well as in the minute mesenteric branches.

From absence, therefore, of the circulation of blood in the minute vessels of the surface, there is also that of heat, whence a cold clammy skin ensues; the blood is therefore determined to the larger vessels, which endeavouring to expel this morbid increase, determines the blood to the extremities and the brain; but there being no escape by the surface, a rupture of the weaker branches, therefore, is a consequence, together with an effusion of water, and this rupture and effusion too often first take place from the delicate ramifying branches on the brain‡. This is obstruction from congestion.

But obstruction from visceral enlargement proceeds from some enlarged gland or viscera pressing upon a vein, as in the spleen or the pregnant womb, occasioning dropsy in the limbs, by pressing on a vein, or from ossification§, which is not unusual in veins and arteries. All

* Dr. Vose's case.
† Maxwell's cases.
‡ Plate X. Fig. 3.
§ Veins assuming the nature of bone.

of which causes may exist from the birth, or be progressive, and unattended with fever or any other urgent symptom, which is the true character of dropsy of the brain, or as it is ordinarily termed, water in the head.

The above definition, I trust, my readers will acknowledge to be satisfactory and simple: I can confidently assure them the assumptions are perfectly realized by practice and experience.

Let me now pourtray the symptoms of effusion on the brain. After the severe symptoms which I have described, children moan heavily; yet it is uncertain what is the matter with them; their eyes are variously distorted, and doubtless, about this time, every thing to them appears double; they look occasionally in a wild manner, as if suddenly frightened; the breath has a sickly, offensive smell, which is peculiar to this complaint. The child will be now affected with a deep stupor, and with difficulty will be roused from it; one eye loses its motion, and, lastly, both become paralytic*. The pupil of the eye ceases to contract, and remains insensible to the greatest light; there is an effusion of red, on the white of both eyes, which terminates in a glutinous film and blindness. The little sufferer is constantly raising its hands to the head; muscular contraction now takes place in the arms, legs, and face, and twitching or jerking of the tendons of the arms about the wrist; the cheeks become flushed, then pale; sometimes a convulsion prevents utterance; great difficulty is experienced in deglutition; breathing becomes exceedingly laborious, and frequent, with a kind of snorting noise; a morbid sensibility to light is a constant symptom; and there exists, I believe invariably, head-ache. This is ascertained from those children who were able to speak. There is a grinding of the teeth, especially when the child is asleep; a morbid sensibility to sounds, so that the little patients appear greatly distressed

* Plate X. Fig. 2. exhibits the ball of the eye and optic nerve, which is now principally affected.

A is the lachrymal gland which supplies the tears.

B, the end of the optic nerve.

C, the ball of the eye.

D, some of the muscles which move the ball cut off.

on the slightest noise. They cannot bear an erect posture, and if placed in that position, even for the shortest time, become exceedingly faint and sick. The countenance with this complaint is long, the cheeks fall in, and the sides of the nose are as if pinched together; there is a yellow paleness, and on the whole, the infant is exceedingly pallid, with every lineament strongly expressive of suffering and pain. The temper is especially irritable and fractious. All the veins of the head are swelled and distended, and the forehead is frequently burning. The child prefers the head being low in the bed, feeling pain the instant it is raised; the knees are drawn up; deep, and repeated sighs are uttered, and the head rolls from side to side. It cannot bear being spoken to; there is a constant retching, and it is found difficult to keep any thing on the stomach; the urine is retained a considerable time, and the bowels are not moved but by purgatives, and sometimes the most powerful medicines have not the least effect: the evacuations are generally of a dark greenish colour; of a peculiar fœtid smell: as the bowels are insensible to the operation of purgatives, so is the skin insensible to ordinary stimulants; blisters seldom rise; mercury in its largest doses loses its effect, so that the greatest imaginable difficulty is experienced in exciting salivation. This insensibility becomes general, as it is the want of excitement which prevents the making of urine and the power of action in the bowels.

During the last stage, however, the dejections and urine pass away involuntarily. One of the most certain symptoms of effusion on the brain is irritability of the stomach, with nausea, and a peculiar insensibility of the bowels, resisting the most drastic purgatives; there is a singular cadaverous smell, likewise, in the dejections, when they are passed. There is a constant squinting; and occasional spasms, affecting the gullet, which prevent the action of swallowing, and at other times, the organs of voice and speech.

There are, besides, almost always an enlargement or distension of the veins of the head, and puffy swellings above the nose.

Let it be understood here, that in regular dropsy of the brain, I mean that which is idiopathic, when the membranes of the brain have been examined, they have never shewed any appearance of inflammation; on the contrary, in effusion, it has been found, that inflammation has been the grand injury, and that the fluid affused is blended with flakes or filaments, and the membranes thickened and adhering: indeed the fluid is ordinarily very small in quantity; shewing that these are quite distinct diseases. Having pointed out the true nature of water in the head, I trust I have satisfactorily shown to all parents, that my definition, though differing from ordinary descriptions, has every ground on which I may claim their favourable belief in my principle.

A confirmed dropsy of the brain in a child will be discovered from its birth; but children with regular formed heads have not that disease, though they are subject to effusion, a symptom only, or in other words, termination of inflammation in the brain, a disease very easily prevented, and very often cured*; and indeed, my extensive acquaintance with dissection, in cases of death from attacks of fever in India, induce me to believe, that no death ensues from fever without effusion on the brain. This disease of water in the head, therefore, I conclude, is not so common as effusion†, and even this latter effect is not always present.

A very learned practical paper has appeared from the pen of Doctor Nicholl, in the 3d vol. Irish Medical Transactions, where he describes that peculiar state of this disease of the brain, which is neither attended with inflammation or effusion. It is familiar to practical medical men, and is thus described by Doctor N. "There is a state or condition of the cranial‡ brain in infants, which may be called a state of irritation, an irritated state, or, in a word,

* Vide Cases, Part III. Sect. XIV.

† I beg here to observe, that my readers may think me unintelligible in making a distinction between effusion and dropsy, as dropsy of course is effusion: but I imply by the latter, symptomatic disease, and by the former, idiopathic.

‡ The doctor uses the term cranial, in contradistinction to that of the spine.

erethism*. What this peculiar condition of the cerebral structure is, I cannot explain; it is a state distinct from that which is called inflammation; for it may exist without any perceptible increase of the quantity of blood received by the cerebral blood vessels. It is a state in which inordinate effects arise in the cerebral structure from ordinary impressions upon different parts of the nervous system. In its perfect form, and under a high degree of it, it is a highly sensitive condition of the cranial brain, a condition the very reverse of that state under which sleep occurs. Under such a condition of the cerebral substance, the child is wakeful, restless, attentive to every sound, and to every object of sight; irritable in temper; the retina is highly sensible to light; the pupil generally more or less contracted; the limbs much in action; the head suddenly moved about, or shaken from side to side; and a degree of animation and a quickness of observation are present, much beyond what is commonly seen in children of the same age; so that, although a morbid condition of the cranial brain be present, the infant may be considered as particularly healthy, on account of its being lively, and sensible to the most trifling impression. By an attentive observer other symptoms may be noticed; the child starts when asleep; when awake, a sudden frown passes over the forehead, and then disappears; the eyes are sometimes closed irregularly, or alternately a winking of one eye, or of both eyes, may sometimes be detected; the hand is often carelessly passed over the forehead, or over the side of the head; the child cries without any evident cause, at other times it shrieks; the fists are clenched; the fore-arms bent upwards on the arms. Such a state of the cranial brain constitutes the simple form of what may be termed sensitive erethism. Erethism of the cranial brain in infants may exist as an effect of the original structure of that substance. In many infants a tendency to this morbid state arises from a languid frame of body, or is acquired from depraved, or from defective nutriment; infants, in

* From the Greek words to excite or irritate, a term denoting increased sensibility and irritability.

short, of that habit which is better known than described by the term scrofulous, have a condition of the cranial brain, which approaches nearly to erethism, or may readily be brought into that state. The exciting causes of erethism of the cranial brain in infants are numerous: among them may be reckoned, concussion of the cerebral substance, from a fall or blow; long continued absence of sleep; keeping the head too hot, or exposing it to the sun, or to a fire, or from long continued exposure of the eyes to a high degree of light.

"There is another form of erethism of the cranial brain in infants, in which there is great want of animation, the child being dull, yet fretful if roused; the head, perhaps, being suffered to droop, or being reclined on either side; there being an absence of sleep, a state that can scarcely be called waking; an indisposition to move; an indifference towards all objects; a general pallor and chilliness of the body; a dull state of the eyes; a rolling or turning up of the eyes; a plaintive moan, or occasional shriek; the child awaking from sleep with a note expressive of pain or of displeasure; a wrinkled state of the integuments of the forehead; the hands raised towards the head; the pupil more or less contracted; there being apparently no notice taken of any object of sight; the body and lower extremities being, perhaps, extended; the head thrown backwards. This form of erethism may be distinguished by the term *torpid erethism.*"

Many are the *exciting causes* of erethism of the cranial brain in infants; but among the most frequent, the author reckons the "impressions on the anti-cerebral extremeties of nerves, which are spread out in the substance of the liver and throughout the alimentary canal."

"Thus we find that the presence of worms; of unnatural or of undigested food; of an accumulation of fæces in the alimentary canal; a vitiated state of the mucous membrane of that canal, and of its secretion; an inactive state of the secreting apparatus of the liver; a congestion of bile, or of blood, in the liver; an inflamed, or otherwise diseased state of that viscus, or of other contents of the abdomen, may give rise to an erethismal

state of the cranial brain. The process of dentition may induce this state of the cerebral substance. An increase of the quantity of blood that circulates through the cerebral blood vessels, may give rise to an erethismal state of the cranial brain. A more rapid circulation of the blood through the cerebral blood vessels, arising from hurried action of the heart, may bring on this state."

In appending the foregoing observations, I should not fulfil my duty, did I not express my conviction, that few persons would be able to distinguish between erethism of the brain and simple irritability of the stomach, or effects from erysipilas, on any other part of the body: it appears to be nothing more than this disease, modified on that sensitive organ.

The following symptomatic delineations, blended with the state of the pupil peculiar to these cerebral affections, are given by Dr. Nicholl. I add them, not that I have any faith in the statement, as I have witnessed every appearance of the pupil, as is here mentioned, when children have been in the highest health: and indeed, I fully believe the pupil is a most uncertain guide.

"The appearance of the pupil, then," continues the doctor, "must be taken in conjunction with other symptoms, before we can ground our diagnosis upon it.

"A highly contracted pupil, with a general increase of sensibility to impressions; with restlessness; with an unquiet state of the head; with startings; with rolling of the eyes, indicates the presence of the sensitive form of erethism of the cranial brain.

"A highly contracted pupil, conjoined with a general want of animation; moaning; pallor; coldness; turning up of the eyes; a torpid state of the whole body; denotes the existence of what I have called torpid erethism.

"A highly contracted pupil, together with flushed cheeks; redness of the conjunctiva; charged state of the blood vessels of the head and neck; great heat of the head, and of the body generally; shaking of the head; starting; great restlessness; intolerance of light and of sound, denote the presence of inflammation of the cranial brain.

"A dilated pupil, succeeding to an erethismal state of the cerebral substance, and preceded by a highly contracted pupil, denotes torpor of the cerebral substance.

"A dilated pupil, appearing in the first instance, with a disordered state of the alimentary canal, whether with a relaxed, a confined, or a loaded state of that canal, seems to point out that the primary cause of that appearance of the pupil is seated in the abdominal cavity.

"If pressure on the region of the liver produce uneasiness, or bring on contraction of the muscles of the lower extremities, or a twisting and shrinking of the body, or if a deficiency of bile, or a vitiated state of bile, be denoted by the appearance of the stools, the primary cause may be suspected to lie in the liver, or in its ducts.

"When the dilated state of the pupil is brought on by disease of the mesenteric glands, the existence of such diseased state will be denoted by a full, hard, state of the belly; by fever; by emaciation; by griping pains; by a whitish, milky, appearance of the urine; with an iridescent scum floating on the surface of that fluid.

"A dilated pupil, existing with general torpor of the whole system; with constipated bowels; with heaviness of the head; with a comatose state; with insensibility to impressions; points out torpor of the cranial brain in what way soever induced."

Quitting Dr. Nicholl, I shall conclude this section, and mention, that while the vessels of the brain are full of congestions of blood, or from a sudden impetus rupture ensues, torpor is produced, and sudden death is a consequence, which is designated apoplexy.

SECTION VIII.

Apoplexy.

(See Part III. Sec. IV.)

THIS is that disease in teething, when sensation is suspended, while the vital and natural functions continue; respiration being generally laborious, and attended

with snorting*: there are also a swelling of the veins of the neck, trembling voice, sudden change of the countenance; the face is generally flushed, pulse full, and again sometimes hardly perceptible; violent headache; giddiness, vomiting, frothy saliva or foam is secreted in the mouth. Dangerous attacks commence with small pulse, which becomes afterwards full; and a cold clammy sweat. It is not unusual for the temperature of the surface to be above par, and accompanied by copious perspiration; fever is not usually present. While the fit is on, the internal functions do not appear much disturbed, and the secretions and excretions appear nearly natural; abolition of sense and of voluntary motion gradually ensues, and respiration and pulse also become more and more weak. Death sometimes takes place in less than one or two hours. I was called to a little boy of two years of age, a few days ago. He had been playing about in good spirits during the morning, but at half past ten was suddenly attacked with convulsions; he was instantly put into a hot bath, and a dose of calomel was given to him: I saw him at eleven. He was then in a profuse perspiration, and the skin cool: but he made several efforts to vomit, and had still the spasmodic tremor upon him; he was torpid, and the eye dilated. He died in six hours from the attack. I opened the head, and found the vessels of the brain distended with blood, and there was slight effusion. The length of the disease is generally from eight to twelve, twenty-four, and forty-eight hours. If a child recover, he very frequently loses the use of his limbs. But to revert again to the irritation from teething, I am now led to another effect produced by it, which is called a wasting away.

* I consider apoplexy in many instances to be the precursor of effusion, so that in a measure they are connected in the treatment laid down in the Third Part of this work.

Section IX.

Wasting Away.

(Vide Part III. Section V.)

This is a gradual reduction of muscle. This effect generally takes place, when the child is between 15 months and two years old. It is called by medical writers Marasmus, derived from a Greek word, signifying to grow lean.

Section X.

Marasmus.

It is perhaps one of the most difficult matters for a parent to discover whether there exists a natural falling away, or reduction in fat, removing the efficient causes of irritation during teething, or whether there exist a morbid, diseased wasting away. This point shall be clearly defined, in this article, for my readers, that they may be enabled to ascertain correctly how to act in this important case. When an infant has passed its third month, if it have a good, healthy nurse, and is in ordinary good health, it begins to grow exceedingly fat; and if the teething goes on favourably, this continues until it is exchanged for muscle. But, on the contrary, if the irritation of the teeth be difficult, the fat gradually decreases, until nothing is observed but flesh and bone. Now, if the bowels are regularly open, two, three, or four times a day, and the dejections of a healthy natural colour, the wasting is healthy, and the child will doubtless do well, as nature has placed the constitution in a state secure against the attacks of fever, convulsion, water in the head, &c. But on the contrary, if there exists this gradual wasting away, and the child's bowels are costive, the appetite good, &c. or the dejections frequent, lined with mucus, and tinged of a green colour, and withal offensive, then we have the positive disease called Marasmus, of which we are now to treat. Before this complaint actually commences, the

child has obtained the whole of the teeth, or is about shewing the eye or last double teeth. The age, therefore, is generally about 18 or 22 months, when the wasting is particularly marked and obvious. It will at once, therefore, be understood, that the wasting is the result of the irritation and excitement under which the whole constitution has laboured during the process of teething. The infant, nearly exhausted, yields to the overwhelming sufferings against which it had so long contended; so that science alone, with the blessing of God, can bring it safe through this truly distressing trial. If science can bring the constitution to the second year, she generally triumphs.

I am not among those who despond, if we only keep clear of fever and apoplexy: all that is to be apprehended is an attack of the latter disease, on account of the serious consequences of convulsion and effusion on the brain; and we must ever bear in remembrance, that we have infants to deal with, who cannot speak or answer our enquiries, and who cannot discriminate even our signs, by which we might receive information by signs from them in return; but we are to go on our own practical knowledge of the infant's character; and mothers must not be angry with medical gentlemen, should they enquire whether the child is naturally peevish, passionate, or in the habit of crying without any particular cause or reason, or in short, whether of an exceedingly bad temper: such enquiries are necessary; and there are some medical gentlemen who are very *au fait* in such matters, who will introduce the subject in a pleasing way, but often at the sacrifice of truth. "Lovely little dear, indeed," the pleasing medical man will say, "what eyes! how truly beautiful! a perfect semblance of his Mamma! but indeed, I think, on nearer examination, there is a cast near, very near indeed, to Papa; a bold expression of features resembling much the other parent; but he has quite the pretty mouth and eyebrows of a little girl: doubtless, Madam, you observe a strong likeness to yourself in this pretty little pet of yours; and that the likeness is traced in the mouth and eyelids. But is

it not, my dear Madam, very unaccountable, that the loveliest children, even from their birth, have either irritation in the bowels or stomach, which induces the poor dear little things to constant peevishness, or rather I would say, begging your pardon, constant pain, which of course induces the child to express it either by tears, or moans, which would, I am satisfied, move the hardest heart to commiserate?" The mother, by this Parisian language, lets the secret out, and the medical adept *smiles most heartily in his sleeve*, knowing all along the child must be naturally cross. Let me strongly advise mothers to tell all and every thing respecting the temper and all the ways of their children, rather than permit such a course of uncandid enquiries, and subject themselves to be the dupes of unmeaning compliment.

I remember being told by an officer in this service, that a friend of his, who had suffered greatly from long residence in India, and the seat of his sufferings being in the liver and bowels, was recommended to call on Mr. Abernethy, on his reaching London, and to put himself under his care. The officer did so, and Mr. Abernethy paid his medical visit accordingly, and requested his patient to state from first to last his complaint, its character, and treatment up to the date of the interview. The patient complied, and, like all invalids, made a long story of it; to which Mr. A. (his usual custom) listened with great patience. The officer having finished, Mr. A. inquired, "Pray, Sir, is the weight in the side which you feel particularly great and obtuse?" To which the patient replied, "Why——why, Sir"——"O" exclaimed Mr. A. "no whys, Sir; yes or no, if you please;" but the patient continued, "Why, Sir, you must know"——"Why——why, Sir," interrupted Mr. A. Notwithstanding, the patient, equally persevering, "Why, Sir, I say"—On which Mr. A. driven to a loss of temper, promenaded the room, whistling the whole time, (his usual custom, I am told, when annoyed,) which so irritated our Indian patient, that he suffered the serenity of his temper to depart from him also, and declared, that had he known Mr. A. he would have sent for another gentleman of the faculty. Of course

there were plenty to be had, and equally clever, perhaps he would have added; but it is not improbable that a sudden twitch of the liver at the time made him surrender in submission. Mr. Abernethy, then recovering his temper, declared, that he had sat nearly half an hour patiently to hear the gentleman's complaint, without interrupting him once, and that the least he could expect was one direct answer to his question in return. Matters were thus amicably adjusted, and the eminently successful Mr. Abernethy soon brought the patient to acknowledge his skill, by restoring him to perfect health. When they became more acquainted, Mr. A. explained, that his time was precious; it was only medical tyros who courted practice by listening to long tales, and telling long ones in return; but he, who had much to do, (and we must allow, did that which he had to do well,) could only afford time to put plain questions, and to receive plain and candid answers.

A medical gentleman like Dr. B. however, who is extremely diffident, will enquire, "How is your little girl today?" The mother replies, "Much better." Presently the child will scream most loudly, and the mother carelessly observes, "Poor dear thing! how passionate and angry the child is!" Dr. B. rising at the moment to see the infant, finds that a servant has taken a plaything away, which, when restored, the little patient instantly recovers its good humour, and playfulness! Dr. B. without, therefore, farther enquiry, lays it down to the child's passionate temper, and adopts it as a rule, that it is not disease or pain that causes the screaming. Being content with this discovery, he walks away. During the whole time, however, it was merely the toys which made the pain bearable to the little sufferer, and it was the occupation of the mind which, in a certain degree, lessened the torment of pain. Now if the parent had been frank and candid, she would, probably, have had the pain removed out of the bowels and stomach of the poor child; but the want of that candour, so indispensable, leads both doctor and mother into innumerable blunders, to the great suffering of helpless infancy.

A child, when first affected with this disease, becomes exceedingly languid, and is always throwing its little head over the nurse's shoulders with great disinclination to sit upright. This continual drowsiness and desire to sleep during the day produces a proportionate restlessness and tossing about at night. It desires and apparently calls for food, which it takes, but with languor and indifference. As the disease advances, the child becomes more uneasy and difficult to please, and is always crying. The feelings become more keen; a cross look will produce a flood of tears. The infant seems to sympathize in the sorrow of the parent, and will often present its pale and dry little lips to be kissed. The appetite changes to a great disrelish for food, so that the little sufferer rejects that which is put in the mouth, and becomes exceedingly fractious if compelled to take any thing contrary to its will; and although the child was previously playful and good tempered, it becomes often, on the accession of the disease, not only most peevish, but distressingly irritable, and clings to one particular servant, or parent, and cannot be pacified if separated.

The breathing, towards night, becomes laborious and quick; and the breath is often hot and unpleasant; its sleep is attended with startings, and the body is quite hot, while the feet and legs are cold. About this stage of the disease, a kind of twisting and starting takes place, known by nurses by the name of inward fits; it is the same which is in new-born infants. The dejections from the bowels vary in different children. To those, who are very stout, the medical gentleman is often called, when they are affected with a "*grievous bowel complaint.*" This is generally the consequence of a previously confined state of the bowels, having by the retention excited so much irritation and disease in them, that a copious discharge is produced of feculent, offensive matter. The bowels first discharge a kind of frothy, pitch-like consistence, exceedingly offensive; at another time, the discharge is of a yellowish green, sometimes like yeast, at other periods quite white; but they are ordinarily of a dark, sombre green. Then they change to be watery,

and finally to be nothing but mucus. The skin is now corrugated or in wrinkles, and the little muscle which is left, is quite flabby and hanging. Indeed the wasting is particularly marked: first observed under the chin, and in the neck, the lower jaw-bone being conspicuous, and the neck thin, long, and lanky; the cheeks are very pale and collapsed, and the nose is filled with a scabby discharge, while cold drops of perspiration lie upon it, as well as on a shrivelled eyelid and forehead. The tongue is white, generally, with a little eruption. A great accumulation of phlegm now ascends the throat, producing a continual spasmodic cough, which is violent after sleep; so that in the efforts to expectorate the phlegm, the child often appears as if it would be suffocated, and the mother finds it necessary to bring the phlegm away with her fingers. About this time we find the belly exceedingly large and hard, especially on the right side; while the neck, arms, and legs, are mere bone, and the child's countenance quite a skeleton*. The urine is passed with difficulty, frequency, and with pain; sometimes clear, sometimes of a dark red colour. On the commencement of this disease in some children, they are averse to sitting or standing, feeling, as it were, the knees yielding to the weight of the body; so that they always insist on being carried, drooping in the nurse's arms with considerable languor. They will be continually calling for water, or for whatever their customary beverage may happen to be. At other times they will insist upon having bread, on receiving which they will reject it, and demand something else; indeed, they cannot be satisfied or pleased: sometimes they will smile and talk, and appear pleased; then all at once scream and struggle most violently, as if some dreadful accident had occurred, and, indeed, the parents are fully impressed with the belief that some accident must have occurred; that the child's head must have been knocked, or it must have fallen; and it is difficult, sometimes, to remove that impression from their minds. During sleep, it will often mutter and talk a great deal, and on a sudden awake, as if terribly alarmed or

* See Plate IX. a case which fell under my own observation.

frightened, and struggle to such a degree, that to hold it in the arms requires some strength, and it is some time before the child can be pacified.

At this period the belly becomes more enlarged and hard, and every dejection is accompanied with discharges of wind. The legs now swell considerably; the cheeks, eyelids, and joints of the hands, become a little puffed. The countenance assumes the appearance of mature age*, and every thing the child does and asks for, seems to be done with sagacity and wisdom; nothing escapes its active sight, while cunning and watchfulness prevent any deception, by imposition, of any kind of medicine on the poor little sufferer. Large tumours now appear, sometimes about the chest, back, or legs, which in their commencement are like large boils, considerably puffed up with air, but red and angry in appearance. The tongue is very foul, the appetite extinguished, and there is considerable restlessness during the night. The child, if only looked at, screams; sometimes great difficulty appears in respiring; every little rib and all the bones of the chest are seen distinctly; so that, when naked, the whole respiratory apparatus is seen to play with great effort: considerable convulsive starting now takes place, and the eyes are inclined to squint; but the eyelids seldom close over them when asleep, the white of them being only seen. Indeed the infant seldom sleeps at this stage, but is in one continual doze. This complaint is, therefore, at this stage, water in the head, probably from slight effusion, as effusion has already taken place in the limbs, eyelids, and joints of the hands. A late and eminent writer on this complaint (Dr. Ayre) observes: "Sometimes (as we shall now proceed to notice) one or more of the symptoms is so predominate over the rest, as to impart to the disorder a striking resemblance to some important disease; and at other times, we meet with it under appearances so disguised, as to give to it something of the character of an anomalous and undefinable affection; for there are few disorders, perhaps, in the whole range of

* See Plate IX.

nosology (1) which present greater variety of morbid,(2) and what to many must seem anómalous appearances than is afforded by this, nor concerning which there is, at times, more difficulty of forming an accurate diagnosis. (3) In infancy it is frequently confounded with irritation proceeding from difficult dentition, or from the presence of worms in the intestinal canal (4): sometimes it resembles tabes mesenterica (5) so closely as to require the most minute inquiries to be made respecting its history and progress; whilst on other occasions, I have seen it assume many of the generally supposed diagnostic symptoms of hydrocephalus internus." (6) Now the fact is, that all these diseases exist together, and it was a true remark of Munroe, the anatomist, that he never opened a child who had died during the period of dentition, without finding the mesenteric glands diseased; and I am fully convinced, that marasmus likewise generally terminates in effusion on the brain. According to my experience, they are, in infancy, the effects of irritation from dentition; for no sooner is that process concluded, than the child rapidly recovers, which is the strongest proof that can be advanced. Dr. Ayre, having observed the same disease of marasmus in adults, concluded that it originated from the same cause. I fully agree with him that the effects are present in both, but certainly not the causes. Adults have dropsy in the head, as well as children; and although both may have been caused by inflammation, the inflammation in the infant may be produced from the irritation of teething, while the inflammation in the other may be the consequence of exposure to the sun: fever also in an adult may have been induced from a check to a perspiring skin, or exposure to the sun; while in the infant it may be solely and wholly induced by the irruption of teeth. In short, the adult and the infant may have precisely the same diseases, but from very different causes.

(1) Classification of diseases.
(2) Diseased.
(3) Signs by which diseases are distinguished from each other.
(4) Bowels.
(5) A wasting away from disease of the glands in the small bowels.
(6) Water in the head.

As this disease, then, proceeds, we find it terminating in effusion on the brain, and all the symptoms that I have described under that article take place. Dr. Ayre is very explanatory on that of marasmus, where he says: "Among the symptoms of a sympathetic kind most constant in marasmus, may be remarked those affecting the head. In the chronic form of the disorder, there are always more or less of pain and dizziness, and a cloudiness in the vision, with dark spots passing before the eye, and a decided failure in the powers of the mind. Where the irritation existing in the digestive organs is not directed to the membrane lining the trachea (1), occasioning the bilious cough, or to the skin, &c. producing eruptive or other disease, it frequently affects the head, particularly of children, in the acute stage, giving rise to several of the symptoms that are esteemed characteristic of hydrocephalus internus. Indeed, so marked is the resemblance in many cases between the symptoms of this disorder and those proper to that fatal disease, that I have been led, on a great many occasions, to suspect that this fatal disease was commencing; and in two or three instances, I have been induced to believe that it was actually present, and have been gratified to find, by the result, that in the latter cases at least, I had been mistaken." Now I have not the least doubt in my own mind, but that these cases were actually effusion on the brain. Dr. Ayre did not believe so, because, in his opinion, water in the brain is irremediable; and strange to say, as we shall find in the sequel, even this author does acknowledge that hydrocephalus is a termination, while here he positively denies it; so inconsistent are minds wedded to particular systems! But to proceed with the remarks of this physician: "In two of the instances, there was blindness for several days, with an unusual slow pulse, in one of them. There is, in fact, often considerable difficulty, especially in infancy, to determine where the symptoms proper to marasmus terminate, and those belonging to hydrocephalus internus begin; and it is frequently by the result alone that an opinion of their na-

(1) Passage to the lungs.

ture can be formed." So, unless the result were death, the doctor could not believe effusion had ever taken place. He continues to observe: "To me, indeed, I must confess it appears probable, that many of the symptoms reputed as proper to water in the head, may exist before the actual effusion of water into the ventricles (1), and that the cases of that disease reported to have been cured have been cases of marasmus, which were about to terminate in that disease." So that this physician will now allow, that marasmus does not any longer exist when effusion takes place. We might as well say, a complaint in the liver no longer exists when an abscess has formed in it. Dr. Ayre proceeds: "Having reached the line which divides the incipient and curable form of it, from that of its fatal stage where an effusion has actually taken place; for it seldom happens, that children are affected with the acute form of marasmus without there appearing some sympathetic affections, denoting cerebral irritation. (2) The imperfection in the powers of speech and vision; and sometimes the sudden and paralytic feebleness of the muscles of voluntary motion, and the decided imbecility of mind, which are occasionally met with in this complaint, are plain indications of this state; and as they are accompanied with apparently the same general symptoms which precede hydrocephalus internus, it is reasonable to presume, that they owe their origin to the same complaint, the boundary which divides the two disorders lying between that moderate cerebral irritation, which gives rise to these, and to some of the other symptoms of marasmus, and that intenser degree of it, by which the watery effusion is produced. When the irritation, in fact, reached no higher state than what is met within marasmus, it is removable; but when it exceeds this, and rises to that point in which a fluid is poured out into the ventricles, it becomes, I believe, irremediable."

While reading Dr. Ayre's work, I felt the greatest respect for his talents and faithful detail of symptoms, and admired his treatment, because it accorded so much with

(1) The cavities of the brain.
(2) Irritation of the brain.

my experience; but he certainly errs in his conclusion. Let us observe what a very experienced and practical physician has remarked on the probability of curing effusion on the brain; for I would not have my readers despond, from a belief that this effusion is incurable*. It will be found, under the article of treatment of this disease, that Dr. James Carmichael Smyth remarks, that he had once been among the number, who thought that this disease was incurable; but that a case, which fell under his care, convinced him (in his own words) "of the danger of forming hasty conclusions, as it carried the most complete conviction to my mind, that recovery from this formidable disease, however rare, was not impossible, and that my previous unsuccessful endeavours, and those of others, were rather to be imputed to our not having known the disease at an early period, than to any want of skill in the treatment, or efficacy in the means employed."

This assertion, I trust, is quite sufficient to show Dr. Ayre's conclusions to be premature; besides, Dr. Ayre evidently states distinct cures of disease, which were certainly nothing else but effusion, although he will not admit them to be so. For instance, he says, "It is no unusual circumstance for children, who are several times affected with marasmus, to have, on each of the occasions, some single symptom present, which did not appear in the other attacks of the complaint. Thus, in one instance, there may be no eruption on the skin; another, a cough; and in a third, the cerebral irritation (2) which terminates in hydrocephalus internus. Some months since, I was requested to visit a child, about two years of age, whom I found labouring under the advanced and fatal stage of hydrocephalus internus. From the intelligent mother, I learnt, that the little patient, about three months before, had been affected with, and had completely recovered from, precisely the same symptoms, which preceded and attended the disease in which I now found him; excepting in the former attack there

* Vide cases, Part III. Section XIV.
(2) Irritation of the brain.

had been the irritating cough, which belongs to marasmus, while in this attack, there had been no cough; and the first symptoms of an alarming kind, which appeared after three weeks indisposition, were in the head."—"A few weeks since, I was requested to visit a child, whose brother I had attended in a fatal case of hydrocephalus internus. In this second case, a very general rash broke out shortly after the commencement of his indisposition. After some days the rash, I understood, disappeared, and was immediately succeeded by general anasarca*, considerable stupor, imperfection of vision, an intermitting and remarkably slow pulse, yeasty coloured urine, so that half a glassful, which was sometimes all that was passed in twenty-four hours, was sufficient to give the proper colour and smell to quarts of water. After no ordinary struggle, the patient recovered, and during his convalescence, the original rash reappeared." Thus, by this physician's own showing, we establish the fact, that the symptoms, at least of water in the head, occur in marasmus, and that, with the blessing of God, the disease may be subdued by the power of medicine. My friends must excuse my prolixity on this subject; as it is desirable that all false impressions of disorders being incurable should be removed from their minds; and it is better to be a little prolix, than to hurry over the subject to save a minute's more reading, and thus fail of having a right understanding of it. My readers must not be surprised at Dr. Ayre's erroneous conclusions. I must mention, that it was but an occurrence of the other day, when one of the leading physicians of Edinburgh positively affirmed, that the fever, which sometimes prevails after childbirth, was irremediable, on account, of course, of his own want of success. Cotemporary with this bold declaration, two other eminent medical men of the same city confuted the assertion, by proving the disease quite under the influence of medicine: by which it is evident that the first distinguished doctor had misunderstood the nature of the disease, and, as a consequence, the treatment. To conclude, therefore, I trust I have satisfactorily

* Dropsy.

set forth, that water in the head is not only a termination of this wasting, but also of irritation from teething. This lamentable malady is preceded, or generally accompanied, by diseases of the liver.

SECTION XI.

Diseases of the Liver.

(See Part III. Section XVII.)

To give my readers an understanding of the complaint called liver, I must inform them, that there are four juices secreted from the blood, essentially necessary to the nourishment of the body. I might here enlarge, and amuse my readers with the interesting subject of sympathy of equilibrium, or association; but a knowledge of the fact, that such sympathy exists between the four different secretions alluded to, is sufficient to lead to the just conclusion, that deficiency in either of them will produce the wasting away mentioned in the preceding section. These fluids being mutually dependant upon one another, if one be affected, the whole sympathize with it: and it is a fact familiar to the profession, that the whole body is sympathetically connected together, one part being dependent in a greater or less degree upon the rest of the body. There is not a sore on the surface, which does not communicate derangement to the general system, or the constitution communicates this as a symptom of derangement to the skin. By this sublime balance of action, it is perceived how surgery and the practice of physic are inseparably connected, and that the practitioner cannot be a surgeon without being a physician; and how contrary to sound judgment it is to suppose, that the latter is capable of prescribing without possessing a knowledge of the former. A surgeon who treats ulcers, does not look to local application alone, but watches visceral derangement in the stomach and bowels. The first of the secretions affected is the saliva, the use of which is not only to augment the taste of the food by the evolution of vapid matter, and to prevent thirst, but to aid

in the action of mastication, by mixing with, dissolving, and resolving the aliment into its first principles, and changing it into a pultaceous mass, fit to be carried down into the stomach*, where it meets with another juice secreted in the stomach, called the second gastric, which has a still greater solvent power, dissolving both animal and vegetable substances uniformly, and reducing the whole to a soft uniform paste. This juice is considered one of the greatest preservatives known against putrefaction. The food having gone through both processes by mixing with these juices, passes into the first curvature of the bowels, where it is arrested by the third juice, called bile, and the fourth, called the pancreatic juice. The bile is for one of the most important uses in the animal economy, namely, to extricate the nourishment in the food from the excrement; and having performed this office, and destroyed, by its particular power of neutralizing acids, any acescent nature in the food, it then surrounds the excrement, which stimulating the bowels, propels it downward, until a disposition in the bowels is excited to discharge it. To prevent the acrid nature of the bile from propelling downward the food and excrement together before the separation has taken place, the pancreatic juice, when the food first comes into the curvature, mixes with the bile to dilute it, and thus diminishes the acridity; and when the juices have been duly assimilated, and the excrement and aliment separated, the bile is left alone with the excrement as before described. This shows to my readers how important is the association of these juices for our nourishment and existence.

Let us now look to the origin of these secretions. 1st. They are formed from the blood. 2d. They are compounded in knotty lumps called glands, and on fine membranes. There are glands towards the end of the jawbone, under the ear, distinguished by the name of parotids. These secrete saliva. The gastric juice exhales from the mouths of small arteries into the coats of the stomach. The bile is compounded or secreted in the largest gland of the human body, viz. the

* See Plate XIV.

liver*; and the pancreatic juice in a gland under the stomach. Different blood vessels, called arteries, take the blood to the several glands, for a material of which to form these juices in them. A vein (venæ portarum) of the liver, which I have before mentioned, performs the office of both artery and vein, the former by carrying the blood to a gland, the latter by taking it back. I have shown, however, the most important function to be in the bile, which separates food from excrement, and then carries the latter away; on this account, it is the most important gland of the body; and this further is evidently shown by the fact, that the whole of the blood of the bowels passes through it.

Whatever cause, therefore, exists in any of these functions, and retards the circulation of blood in them, must also effect a disease or obstruction in the liver; and if there be an obstruction in the liver, then there is no longer a perfect separation of the good from the bad. There is a want of nourishment, and a prevention of the discharge of excrement, occasioned entirely from a want of bile, without which life cannot be prolonged. Hence the disease of the liver, in India, is from a deficiency of this fluid, and the extent of the disease depends upon the extent of this deficiency. Disease of the liver, or obstruction in its ducts†, is here accounted for. My readers, I expect, will naturally observe, that if this be the liver complaint, no visceral disease can exist without that gland morbidly sympathizing, in which conclusion I unequivocally concur. Every medical man who has had much practice in fever, dysentery, what is called water in the head, convulsions, or eruption, first directs his attention to the liver.

The ancients laid the seat of the passions in the liver; and this is most certain, that obstruction in this gland is sure to produce a gloomy, sullen melancholy. This is an established fact in the profession to this day. In all diseases, therefore, there is a certain degree of sympathy in the liver; for as I have shown, the bile is a purgative,

* Plate XIV.

† Channels which carry the bile to mix with the food.

which invariably carries off, if not obstructed, all the morbid matter and extraneous substance; so, contrary to the general belief, there is no danger from excess of bile, for it will purge itself away: but there is danger in a deficiency of it, as well as of the pancreatic juices; because a deficiency of the latter prevents the acrid nature of the bile from being diluted, the consequence of which will be griping pains, inflated bowels, indigestion, and a wasting; also the food (that is, the nourishment of the food) and excrement will all pass away together, on account of the want of this admixture. This is never more evident, than when the food passes through undigested.

Such are the effects of deficiency in the pancreatic juice; and should there be, at the same time, a deficiency of bile, the food will then remain in the duodenum and stomach, which become, in consequence, loaded, as there is more food than the gastric juice can combat: the action of that fluid, therefore, becomes suppressed. This prevents all desire for food, and excites fulness about the chest and bowels, and of course much pain; and as this increases the heat of the body, great demands are made for saliva to quench the thirst induced by the loaded stomach; and the saliva becoming deficient likewise, from the great demands made on the parotids, the whole process of secretion and excretion is interrupted, the circulation of the blood affected, and accumulation in the liver induced, causing it to become particularly large. This is one of the stages of marasmus. When the liver is affected, a considerable swelling will be observed on the right side: by putting the four first fingers under the last ribs of the right side, and pressing, a hard lump will be felt, and the child will wince and scream until the pressure be removed. The whole belly will be found hard and swelled; the white of the eyes of a yellowish* tinge; a dim look in the pupil; and the motions will always be offensive, green, and black; frequent dejections in hard lumps are passed, covered with mucus; loss of appetite prevails, and the tongue is always

* Plate IX.

clammy with thick phlegm. At other times, partial obstructions in the liver exist, producing a different effect, which is called the yellow jaundice.

SECTION XII.

Yellow Jaundice.

(See Part III. Section XVIII.)

There is a great accumulation of bile in the liver in this disease, arising from an obstruction, which prevents its ingress to the curvature of the first bowels to mix with the food; in which case the veins take it up, when, mixing with the blood, it is circulated all over the body, and by going into the small vessels of the skin, that yellow hue in the eyes, and on the surface of the skin, is produced, which distinguishes this disease from all others; of course, the fulness existing about the bowels and the stomach, and the thirst experienced, will be according to the obstruction; but those partial and slight obstructions do not induce such violence of disease. It depends, however, upon the extent of the morbid effects, and in the inverse ratio. A similar obstruction tends at the same time (by keeping the stomach and bowels loaded with food and wind) to press upon the blood vessels which go to the spleen. This will in consequence occasion an enlargement of the spleen.

SECTION XIII.

Enlargement of the Spleen.

(See Part III. Sec. XIX.)

This is generally attendant also on marasmus; so connected are all diseases of the viscera with each other, but more especially with obstruction in the liver. This viscus is on the left side, and the enlargement will be discovered in the same way as the enlarged liver is. In

the enlarged spleen, however, there is generally swelled legs, as well as belly, from effusion, which is owing to the pressure of this large body on some important blood vessels. There exists but little pain from this enlargement, and children are generally regardless about it. Where it does exist, however, it is astonishing what an emaciated appearance it gives to the poor little infant,—the face being quite haggard and reduced, while the body, legs, and arms, often become of an enormous size! Indeed, those who are strangers to such diseases in little children are alarmed at the reduced appearance,as it is depicted about the face and neck,and especially in the falling away of muscle on the upper part of the arms. I was called to see a child, not long since, who afforded a complete illustration of a case of marasmus combined with liver and spleen, consequent on diseased bowels. The child was nearly two years of age; exceedingly emaciated, with scarcely any flesh on his arms and legs. The eyes were protruding, but rather dim; the cheeks were perfectly collapsed, and the nose was equally so. All the features of a peevish character, were depicted on the countenance; his screams were often dreadful, and frequently without cause. Every instant the little sufferer called out for "*toast panee, toast panee** !" The whole of the belly and stomach were shrivelled and hard, especially on the right and left side. The dejections were green, and black, and a dark brown mucus was occasionally intermixed; the mouth was parched, and the lips scabby and dry. There was a large tumour on the back, which seemed to add to the infant's general state of irritability. He was never content unless in the arms of a favourite bearer, and would go to no one else. It happened, that the bearer was taken ill during this period, so that the child's continued crying and screaming were truly alarming. Sometimes he was desirous of sitting; no sooner was his request complied with, than he insisted on being taken up into the arms, and though all his little whims were gratified, he could not rest. It was evident, that there existed an irritability which made no place comfortable. He thought he

* Toast and water.

felt a desire to eat when his dinner arrived: he could partake of nothing, but would masticate a biscuit the whole day long, and he appeared much more irritable, if it was not continually in his hand; he passed restless nights; often slept, or rather dozed during the day. He was exceedingly weak and languid, his head generally lay over the servant's shoulders, and he indifferent to every thing about him: if any person happened to speak or look at him, he would immediately strike his hands, expressive of a desire not to listen, and would cry and scream very loudly, if the by-stander did not instantly desist. In short, he appeared a perfect misery to himself. The anxious mother informed me, that while in the low lands, the patient was a beautiful, fine, stout boy; but no sooner had they commenced their journey towards the upper provinces, than the little sufferer gradually declined, until he had reached his present state. He had no particular disease, she said, that she could discover, but his little stomach was always hard and swelled; he had had no fever; his skin was always cool. She added, that she had consulted with gentlemen, who could give no satisfactory information on the child's complaint; that she was as much in the dark as ever, and was quite miserable on observing him become thinner and thinner daily, and what to do she knew not: whether it was worms, or the weather, she could not say; of this she was certain, that the child would die, unless something was done to arrest the rapidity with which he was declining. I immediately satisfied the mother, that the disease was liver and spleen, the result of irritation from teething. It was treated accordingly, and the child soon recovered. I attended another child, who was further advanced into a state of marasmus than the foregoing. He had all these symptoms, with effusion of water in the legs and scrotum: of course, had not the disease been arrested at that moment, effussion on the brain would have ensued. This child's complaints originated solely from teething. It was never expected that he could survive; and when I mentioned to the father that I did not see any immediate danger, he was quite astonished. The child reco-

vered, and became an uncommonly fine boy. Another little boy, whom I attended, differed from the foregoing, as he was not quite so much reduced; but his case was rather more dangerous than the other, as his liver was quite torpid, and would not act: the dejections were white. I told his parents, that the way to save his life was to send him to sea, and finally to the Cape, when I had no doubt his health would be restored. My advice was adopted, and he is now considered to be one of the finest children at that colony. He began to recover the moment the ship sailed from India. In short, marasmus is so marked a disease, connected with liver and spleen, that it needs no particular talent to discover it. Not long since, I saw a little child in a nurse's arms, while in my daily ride. I knew the child had marasmus, and mentioned to another it could not live many months, unless the disease was arrested. So it turned out. I trust, therefore, that these instances will satisfy the anxious parent, that a merciful Providence has given great power to medicine, by which these alarming and distressing diseases may be assisted in their course, and completely subdued.

Besides these effects from disease, or obstructions in the liver, another principal one is production of acid in the stomach.

SECTION XIV.

Acid in the Stomach.

(See Part III. Section XX.)

Many people will be astonished when they are told, that acid in the stomach produces not only very violent bowel complaints, but vomitings and convulsions. To prevent these serious and alarming effects, the bile is poured out in copious streams, which neutralizes the acid when it is superabundant, which always prevails when the neutralizing power is defective. Various are the symptoms which appear on these occasions. A child will be observed eating pieces of chalk, nay even the chunam

of the walls. This is the dictate of nature, indicating acidity in the stomach, which it is necessary to destroy; but as the accumulation goes on, the infant cries most violently, and its little limbs are drawn up to its very chin from spasmodic pains; the bowels are continually passing small, green, fœtid evacuations: eruptions now ensue; and an observer may notice the emission of acid with the breath. As the quantity increases, the child feels a great sensation of heat in his stomach and bowels; the belly and stomach swell; spasms will now be evident, both in the arms and legs; but they are most particularly strong in the stomach, and produce that hysterical sensation, as if a ball was rising in the throat. At length vomiting ensues, and the hands and feet become quite cold. In this state, the disease bears a great similarity to the Cholera:—so much so, that an officer of the Madras army, having seen this disease, took it for the Cholera, and from the circumstance of his finding the remedy for acid cure that complaint, as he supposed, published to the world that he had at length discovered a specific for this awful visitation. To show the direful effects from deficiency of bile producing accumulation of acid, I will instance the case of a lady, whom I attended but a few days since. She was attacked, for some days, with a sense of nausea, which indicated, that if she were to eat any thing she would certainly reject it, and felt a very unpleasant spasm all along the stomach, and a sensation as if a ball was continually rising in her throat. I was called in a very great hurry by this lady's husband, and was told that my patient had been attacked with most violent spasm and vomiting, and that nothing could allay it. Laudanum and other things had been given without avail. The sickness continuing in my presence, I perceived the vapour of an acid to be emitted. One dose of medicine instantly stopped the sickness, and cured my patient. This lady had been subject for years to these affections, and always "a martyr to headaches," as she said; but here, by this lucky discovery of the cause, was she cured by the most simple remedy in a few moments; whereas she

had tried antispasmodics, mercurials, and various other violent measures, on former occasions, without avail; so important is it to have a right understanding of the nature of those changes which produce disease. Many other adults, as well as children, have received the same benefit from the discovery that acid was the cause of their indisposition, which had been laid down previously to organic derangement, as arising from some other cause. Indeed most affections of a chronic nature in India originate in acid in the stomach. We will proceed to recount many diseases thus produced. The deficiency of bile, which induces this acid, forms, by its curdling power, a disease, in the first place, called the Croup.

Section XV.

Croup.

(See Part III. Section XXI.)

This disease is often exceedingly sudden in its accession, as well as dangerous. The different mucous exudations about the throat become inspissated; the irritation of the acid causes inflammation and a spasm about the wind-pipe; and curdled matter rises up into the passage from the stomach, inducing a sensation of suffocation; and which, indeed, actually takes place, unless it is speedily relieved. The first symptoms of the croup are much difficulty in breathing, and a short hollow cough; but as the disease advances, a crouping, like a hen, is heard, (a peculiar croaking noise, which is produced by the spasm in the wind-pipe;) the child is under the greatest alarm, as if it were sensible of instant death, and its little eyes roll about in the greatest anxiety, while it clings to its mother for safety. The countenance is flushed, the voice quite thick, and the breathing becomes more anxious. The thick sound, like air forcibly drawn through a small aperture of the wind-pipe, attended with a drawing up of the bowels, indicates instant danger; so that, from the struggling of the infant, the counte-

nance becomes livid; every vessel of the neck and head is distended; while the mouth is parched, and the tongue hangs out of it. The feet and hands at this time become cold, and the breast and forehead are extremely hot. If the disease should not reach to this height, then vomiting ensues, with violent and continued coughing: after much straining, at length large lumps of agglutinated, phlegmy mucus is brought up. This at once relieves the patient; and if all the matter is thus ejected, the child gradually recovers. Croup, however, is not the only product of acid in the stomach, but an eruption on the mouth, tongue, and gums is induced, which is called the Thrush.

Section XVI.

The Thrush.

(See Part III. Section XXII.)

This is a disease exceedingly troublesome and distressing, because all that is eaten and drunk excites a continued worrying pain; so that the child is invariably peevish and fretful, and often becomes exceedingly reduced in appearance. There is a falling away, without the parent's knowledge of the cause, saving that it will not eat nor drink as usual; and from the continued pain in the mouth, it is supposed that it arises solely from the teeth, on which supposition no particular examination is made into the nature or cause of the infant's sufferings, and it follows, that by this oversight the disease increases to virulence; extends itself along the throat and bowels; and terminates the life of the little sufferer. The complaint appears in different forms, in different children. Sometimes it commences on the angles of the lips, and then on the tongue, and gums. The eruption has the appearance of little white specks, which, increasing in number and size, run into and connect one with another, until they exude a thin, hot matter, of a very acrid nature, forming a thin white crust, which extends to the

extreme end of the inside of the mouth; and continuing its course, affects the whole passage to the stomach, and even all along the bowels, until it is discovered at the anus. It is fortunate that this disease is quite under the influence of medicine. Every instance I have seen where the remedies were applied, the disease has been cured. Where there is a predisposition to any malignant disease, this complaint not only excites fever, but another still more alarming affection, from its acrid nature; it is called Erysipelas, or St. Anthony's Fire.

SECTION XVII.

Erysipelas, or St. Anthony's Fire.

(See Part III. Section XXIII.)

Nature, endeavouring to free herself from the internal effects of the thrush, excites considerable febrile heat, with so much irritability of the whole habit, that the brain sometimes sympathizes, and delirium ensues; this accession becomes alarming; at length she expels the eruption, which was internal, to the surface of the skin, in large sheets of red blotches, very much resembling prickly heat; only that this is of a delicate pink colour*. Pimples then appear, discharging an acrid, hot matter†, which induces not only a shining, tumefied, inflamed, dry skin, but a burning, almost similar to a fire. Hence its name.

The commencement of the disease is by a cold shivering: on the going off of which, a redness is observed over the whole face, and little pimples, filled with water‡; which, often breaking of themselves, burn like boiling water, and are attended with an almost insupportable itching. Sometimes the eruption or redness commences on the legs, groins, and small of the back; at other times, on the arms and shoulders; but very

* Plate V. Fig. 2. Letters B B B.
† Ibid. Fig. 3. Letter A.
‡ Plate I. Fig. 13.

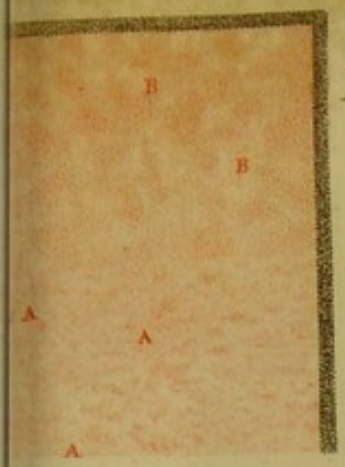


Fig. 2.

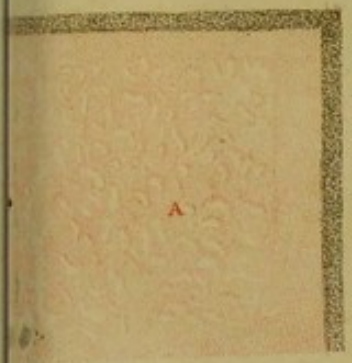


Fig. 3.

Fig. 1.

rarely on the bowels and breast: it occasionally disappears, but warmth brings it out with intolerable pain. The distress and sufferings of the child, as may be supposed, are excessive. The eyes become quite wild, and evident signs of alienation of the mind ensue, together with restless and sleepless nights, and febrile heat. As the disease advances, the affected parts become black, and yellowish; the child's lips are likewise parched, cracked, and black, while a dark matter lies upon the tongue and teeth. The legs and body swell, and the infant becomes reduced and restless. It is fortunate that this disease is under the control of medicine; but where none is used, the above describes its rapid progress. I shall now proceed to trace another disease, occurring from the same source, but in a form differing from the foregoing, which is called Scarlet Fever.

SECTION XVIII.

Scarlet Fever.

(See Part III. Section XXII.)

When the thrush has proceeded beyond the mouth, it sometimes gets as far as the throat and stomach, but frequently stops at the former place; this produces all the symptoms of a sore throat; and the child's wheazing and hollow coughing become almost incessant, and respiration is laborious and difficult. About this period an efflorescence or redness breaks out all over the skin, almost invariably attended with much fever, with a hot and dry skin, and with thirst, the lips and mouth being parched. In the commencement of the disease, a child appears to have its little face suffused with a delicate flush*; but with this it is quite sensible to cold, although the skin is warm to the touch. Much pain is experienced along the whole of the limbs, and the little sufferer, by constant moanings and crying, expresses lassitude and heaviness.

* Vide Fig. 1. B B B.

As the disease advances, the redness increases, and interstices of white appear*.

The eyes become red, and a drowsiness ensues; there are occasional spasms in the limbs: and upon pressure, the redness vanishes, but soon returns. The skin is smooth to the touch, nor is there the least appearance of pimples or pustules. Having continued in this state for a few days, the intense scarlet gradually abates, a brown colour succeeds, and the skin becomes rough, and peels off in small scales. When the disease goes beyond this, it falls into all the violent or acute symptoms of erysipelas; but when it has been properly managed and treated, about the fifth day, all the symptoms remit, and the efflorescence begins to scale off; so that not unfrequently the skin of the body peels off, and the convalescent appears very fair, with a delicate blush on the countenance and body for some time afterwards. Mothers will be astonished to be told, that another disease is also produced from the same source of acrid acid, and deficiency of bile; this is called the Measles.

SECTION XIX.

Measles.

(See Part III. Section XXV.)

This disease is considered by medical men, a mere modification of the small-pox. It is, however, well known to the practitioner of experience, that when erysipelas, scarlet fever, and thrush take place, measles will always show itself, or will follow not long behind. Indeed these diseases are so connected with one another, or rather attend upon one another, that it is very generally believed in Europe, that the unknown power in vaccination retards, or very materially lessens the virulence of all these complaints. It may be inquired, how can vaccine virus destroy acid in the stomach?

* Ibid. Fig. 1. C C C.

This question I am not able to answer, for I do not know what is the power of vaccine virus; but the small-pox is one of the most virulent and powerfully putrid diseases with which I am acquainted; moreover, in this disease, the stomach is filled with acrid acid, and there is a deficiency in biliary secretion. Vaccine prevents the virulence of this disease; and the only way I can account for it is, by the administration of divine Providence. I cannot but concur in the belief that it has this power, which is invariably ascribed to it.—But to advert to the symptoms of measles. This is a disease which is professionally called *rubeola*, from *rubis*, to become red, and *morbile*, from *morbus*, a disease. The commencement is observed by hoarseness, accompanied with a dry cough, frequent sneezing, with drowsiness and lassitude. Fever now takes place, exhibited by a very hot, dry skin, and the eyes appear distended and full of blood. The febrile symptoms are ushered in with cold shiverings, which are shortly followed by heat in the palms of the hands, feet, head, and breast, and the child's mouth becomes dry and parched, and the breathing is quick and laborious. These symptoms continuing during four days, an eruption then appears, generally on the face, and successively on the lower parts of the body. The appearance of this eruption, at first, is in small red points; but soon after, a number of these appear in clusters, which do not rise in visible pimples, but by the touch are found to be slightly prominent*. This is the case on the face; but in other parts of the body, the prominence or roughness is hardly to be perceived. On the face, the eruption retains its redness for two days; it is a vivid red; but on the third, it inclines to brown, and about the fifth day the eruption entirely disappears, when a desquamation of a *meally* appearance takes place. Hence, I fancy, comes the name of *measles*.

During the whole time of the eruption, the face is rather turgid, but seldom much swelled: sometimes, after the eruption has appeared, the fever ceases entirely; but this is not ordinarily the case; more commonly the fever

* See Plate IV.

continues, or is increased after the eruption, and does not cease till after the desquamation: even then, the fever does not always cease, but continues with various duration and effect. Though the fever happens when the eruption takes place, it is common for the cough to continue till after the desquamation, and occasionally much longer. In all cases, while the fever continues, the cough attends also, with an increase of the difficulty of breathing, as both of these symptoms affect the lungs. This may happen at any period of the disease, but very often it does not come on till the desquamation of the eruption. Subsequent to this period, purging takes place, and continues for some time. The measles, it is supposed, are occasioned by a peculiar kind of contagion, the nature of which is not understood; but when it is violent, it generally assumes the character of small-pox.

SECTION XX.

Small-Pox.

(See Part III. Section XXVI.)

This disease advances by a fever, and is succeeded by a number of little inflammatory pimples on the skin†, which proceed to suppuration, and the matter formed is capable of producing the disorder in another person, if taken from a pustule, and applied to a part deprived of the cuticle, as in the case of inoculation.

Four different stages are to be observed in the small-pox, viz. the febrile, eruptive, maturative, and lastly, the declination, or scabby, which is usually accompanied with secondary fever. Where the disease has arisen naturally, and is of the distinct kind, the eruption is commonly preceded by a redness in the eyes, soreness in the throat, pains in the head, back, and loins, weariness and faintness, alternate fits of chilliness and heat, thirst, nausea, and a quick pulse. In some instances, these symp-

† See Plate I. Fig. 12.

toms prevail in a high degree, and in others, they are apt to take place a short time previous to the appearance of the eruption, always giving great alarm to those not conversant with the frequency of this occurrence. About the third or fourth day from the first seizure, the eruption shows itself in little red spots, similar to fleabites, on the face, neck, and breast; and continues to increase in number and size for three or four days; at the end of which time, they are to be observed dispersed over several parts of the body. If the pustules are not very numerous, the febrile symptoms will generally go off on the appearance of the eruption, or at least become very moderate. It sometimes happens, that a number of little spots of an erysipelatous nature*, are interspersed amongst the pustules; but these generally go in again as soon as the suppuration commences, which is usually about the fifth or sixth day, at which period a small vesicle, containing an almost colourless fluid, may be observed on the top of each pimple. Should the pustules be perfectly distinct and separate from each other, the suppuration will probably be completed about the eighth or ninth day, and they will be filled with a thick yellow matter; but if they run much into each other, it will not be completed till some days later. When the pustules are very numerous on the face, it becomes about this time much swelled, and the eyelids are closed up; previous to which a hoarseness in the throat takes place, and difficulty of swallowing, accompanied with a considerable discharge of viscid saliva. About the eleventh day the swelling of the face subsides, together with the affection of the fauces†, and is succeeded by the same in the hands and the feet; after which, the pustules break and discharge their contents, and becoming dry, fall in crusts, leaving the skin, which they covered, of a brown red colour; which appearance continues for some weeks. In those cases, where the pustules are large, and are late in becoming dry and falling off, they are very apt to leave scars behind them; but where they are small, suppurate quickly, and are few in number, they neither leave any marks

* Plate I. Fig. 13. † The cavity behind the tongue.

behind them, nor do they occasion much affection of the constitution. In that species of the disease called *confluent*, the eruptive fever is much more violent than in the one called *distinct*, being attended usually with great anxiety, heat, thirst, nausea, vomiting, a frequent and contracted pulse, and often with coma and delirium; the consequence of which, in infants, is often convulsive fits, or they usher in a malignant species of the disease. The eruption usually makes its appearance about the third day, being frequently preceded or attended with an efflorescence similar to what takes place in measles; but the fever, although it suffers some slight remission on the eruption of the pustules, does not go off, as in the distinct kind; but on the contrary, becomes increased after the fifth or sixth day, and continues throughout the remainder of the disease. As the eruption advances, the face being thickly beset with pustules, becomes very much swelled, the eyelids are closed up, so as to deprive the patient of sight, and in adults only a gentle salivation ensues. The vesicles on the top of the temples are to be perceived sooner in the confluent small-pox than in the distinct; but they never rise to an eminence, being usually flat, neither do they arrive at a proper suppuration; the fluid contained in them, instead of becoming yellow, turns to a brown colour. About the tenth or eleventh day, the swelling of the face usually subsides, and then the hands and feet begin to swell: about the same time, the vesicles break, and pour out a liquor which forms a brown or black crust; this, upon falling off, leaves deep scars, which continue for life; and where the pustules have run much into each other, they then disfigure the face very considerably; sometimes it happens, that a putrescency of the fluids takes place at an early period of the disease, and shows itself in livid spots, interspersed among the pustules, and by a discharge of blood by urine, stool, and from various parts of the body. At this period, in the confluent small-pox, the fever, which perhaps had slightly remitted from the time the eruption made its appearance to that of maturation, is often renewed with considerable violence. This secondary fever is the most

dangerous state of the disease. It has been observed, that the small-pox is apt to appear immediately before or after the prevalence of the measles. Another curious observation has been made by Mr. John Hunter, relating to the symptoms of these complaints, namely, that if while a patient labours under the small pox, he is seized with the measles, the course of the former is retarded, till the eruption of the measles is finished. Such is the small-pox, which sometimes afflicts infancy. But while most of the foregoing diseases appear slowly and progressively in succession, there is another disease caused by acid, which affects children during the period of dentition. This is Intermittent Fever.

SECTION XXI.

Intermittent Fever.

(See Part III. Section XXVII.)

It will astonish many of my readers when they find, that this disease is also ascribed to acidity. Like erysipelas, it much resembles inflammation; but if we were to treat it as an inflammatory fever, our treatment would be erroneous and dangerous; for experience shows, that we must pursue quite an opposite course. Indeed, it is very evident that this disease is not inflammatory; otherwise it would not exist one day, and be absent another; disappearing and recurring alternately every two or more days. The fact is, during the paroxysm, there is such a vomiting of acid matter, and likewise such copious perspiration, that the constitution is relieved of its morbid accumulations, and the exciting cause, or nervous irritation, consequently is appeased; but these re-accumulating, the fit again recurs. But what is the most extraordinary in these diseases originating in acidity, is, that they should prove endemic and epidemic: I can only ascribe this circumstance to prevailing heat, or sudden changes, and miasmata, all which seem to cause those derangements in the constitution which generate this abundance of aci-

dity. The disease is ushered in by the child becoming exceedingly restless and peevish, vomiting the milk as soon as it is taken. At length a violent cold shivering ensues; the ends of the fingers and toes turn quite blue. It is found difficult, by any quantity of flannel or clothing, to reproduce warmth to the skin: at length, however, it appears; but as the poor infant was exceedingly cold, it now becomes equally hot; the skin truly so to the touch; the eyes inflamed; the soles of the feet and palms of the hands actually burn; and the mouth becomes perfectly parched and dry. The screams of the infant are loud, and it is found difficult to keep the little sufferer in bed. After being in this state about one or two hours, a profuse perspiration breaks out about the head and chest; this instantly brings relief to the infant, who being, as may very easily be supposed, quite exhausted by the cold and hot paroxysms, falls into a sound sleep, and wakes ordinarily apparently well, saving the effects of debility which are present. On the commencement of this disease, it is often what is called *Quotidian*, that is, it returns daily. As it decreases in violence, it becomes *Tertian*, that is, it returns every third day; and then *Quartan*, returning every fourth day. It sometimes, however, begins as a *Quartan;* at others, as a *Tertian*, which is the most common type. The strength of the disease is determined by the length of the intermission: the more frequent the attacks, the more violent and acute they are.

Section XXII.

Local Checks of Perspiration.

To explain this, I shall premise by observing how such no doubt checks on parts only are produced, although I have they are already known to most of my readers. Their immediate effect is contraction of the pores of the skin, and of course either total or partial obstruction of perspiration. I have already shown, that a current of air passing in a direct line over a wet surface, effecting an evapo-

ration, produces a considerable degree of cold. Let us imagine a person sleeping in bed between two doors, covered over as far as the head, and on his face a free perspiration: the pores of the skin are suddenly contracted by the cold; the blood in the extreme vessels of the skin accumulates, and congestion ensues: the fine nerves being irritated to expel it, excites excessive pain; and the vessels of the skin being filled, induces a redness, and terminates in what is called inflammation. It depends upon what part is affected to give it a specific name: if the obstruction of the perspiration is complete, and it produces inflammation of the eyes, then it is called *Ophthalmia.*

Section XXIII.

Ophthalmia.

(See Part III. Section XXVIII.)

There is a membrane which lines the inner surface of the eyelids, and also the forepart of the eye; it is called the conjunctiva, from *conjungo*, to join together. This fine, transparent membrane is joined to what is called the *albuginea*, from the Latin *albus*, white; and thus, in conjunction, these two membranes form what is called the white of the eyes: these are filled with small capillary blood vessels, which, in health, contain only a watery fluid, so that they are imperceptible; but in inflammation they are filled with blood, which discovers them. There is no part of the human body which has such a high degree of nervous irritability as the eye; consequently, the increased excitement brought on by this filling of the tender vessels on its ball, induces great agony; exciting a sense of weight and fulness, with deep darting or shooting pain, which none but those who have experienced this excruciating complaint can well describe. Our hearts are moved with pity when infancy is attacked with it. The little hands are continually directed to these painful organs. The torment is so great, that they cannot sleep; and their screams are so loud, and struggling so power-

ful, that it is impossible to refrain from an apprehension, that the child will burst some blood vessel; but through divine mercy, before it reaches to this alarming height, a counteraction is frequently excited, forming a disease called Purulent Ophthalmia.

SECTION XXIV.

Purulent Ophthalmia.

(See Part III. Section XXIX.)

To explain this disease, I must mention, that there is a fine membrane covering the inside of the nose, bowels, stomach, kidneys, liver, &c. which is inflamed by any irritating cause. Nature, to prevent any serious harm, excites to a discharge of white matter: if the irritation be very violent, the matter so discharged turns to a yellowish hue. This membrane is similar to the one called *conjunctiva*, before mentioned, and this discharge must be great from the eyes to prevent serious injury. There are likewise lachrymal glands, which secrete tears, as well as small glands all along the eye-lashes, which are called *sebaceous* glands, from *sebum*, suet, because they secrete a kind of fat matter, which lubricates the eyelids, and prevents their uniting. The lachrymal and sebaceous glands are stimulated to great action: the tears, therefore, flow rapidly, while the sebaceous fluid turns into a kind of wax, which is so glutinous, that it is a long time before the eyelids can be separated, if the little patient sleeps any length of time. Although this might appear a very serious complaint, it is one, notwithstanding, evidently intended by nature to cure the other. The purpose of sebaceous fluid seems to be in the first place, to prevent the eyelids from uniting together to exclude the light, which is a great stimulus, and aggravates acute inflammation. The tears flow out at the same time, and are useful to wash or bathe the eye. It is expedient, however, to call in the assistance of art, as the tears are not sufficient for the purpose, in dis-

ease, and consequently the mucous exudations on the membranes become more and more virulent, which, if not wholly removed, will actually corrode the eye, and destroy it altogether. Instances there are, in which the eyes swell to an enormous size, and a very copious waxy discharge ensues, which, with remedial measures, carries off the disease. While such is the local effect on the membranes of the eye, it occurs, also, on a similar membrane, which lines the inside of the nose, mouth, and throat, exciting much the same kind of inflammation, and is called Sore Throat.

SECTION XXV.

Sore Throat.

(See Part III. Section XXX.)

This is a complaint very common among children. It is not dangerously violent, if the inflammation is not great. We shall find a constant running at the nose, and as the disease continues, the discharge will be changed from a clear white to a thick, offensive, yellowish mucus: the most distressing sensation will be at the root of the tongue, or top of the throat, when a child will experience great difficulty in swallowing its own spittle, while a very unpleasant, dry, and parched skin, and pains along the joints and bones, are felt. The voice becomes quite hoarse, and there exist a drowsiness and langour, which are exceedingly depressing. The affection of the membranes of the eyes, nose, throat, and mouth, are not unusually combined, which distresses the little patient exceedingly, and in Europe, is a prelude to inflammatory, and lastly typhus fever; but in India, it frequently terminates in Hooping Cough.

Section XXVI.

Hooping Cough.

(See Part III. Section XXXI.)

The discharge from the nose and eyes are now increased to a thick, glutinous, yellowish matter; constant expectoration of tough, viscid phlegm takes place from the throat; an occasional coughing ensues, that is to say, the coughing, with intermissions, comes on only in paroxysms, between which, the child appears perfectly well. During the paroxysms, the infant seems almost strangled; the face and neck becoming perfectly livid, till by a violent effort, attended with a hoop, it recovers its breath: from violent straining, small blood vessels are occasionally ruptured, so that blood is observed to run from the nose and mouth; and should the cough be prolonged, the eyelids will become black, as if injured by a violent blow. Sometimes this disease comes on at first, like a common cold, but from the beginning is attended with a greater degree of difficulty in breathing than is common in simple catarrhal affections; and there is a remarkable affection of the eyes, as if they were swelled, and a little pushed out of their sockets. By degrees the fits of coughing become longer and more violent, till at last they are plainly convulsive, so that for a considerable time the patient cannot respire; at length, when the infant recovers its breath, the inspiration is, as before mentioned, accompanied with a shrill kind of noise like the crowing of a cock. This kind of inspiration serves only as an introduction to another convulsive fit of coughing, which is in like manner followed by another inspiration of the same kind: vomiting terminates the paroxysms. At other times, when the inflammation spreads, it seizes the membranes covering the lungs, and induces the disease called Pneumonia, or Inflammation of the Lungs.

Section XXVII.

Pneumonia, or Inflammation of the Lungs.

(See Part III. Section XXXII.)

This is generally a very alarming and fatal disease; the discovery of the spread of inflammation to this important organ, is by violent inflammatory fever, with a great difficulty of breathing; a constant hollow cough, and pain about the upper part of the chest. The difficulty in breathing is most observable in inspiration, as the tense, inflamed membranes cannot admit of a full dilatation. The difficulty is still greater, when the child lies upon that side which is most affected. Difficult respiration is occasionally experienced, unless the little patient is placed in a sitting position. There is scarcely any expectoration of matter by coughing. Should there be any, the matter ejected is mixed with blood. It must also be observed, that the pain being settled in the chest, is not an invariable sign of the disease; it is often in the back, between the shoulders; it is ordinarily fixed in the right side; rarely in the left. It is mostly felt about the sixth or seventh ribs, nearly the middle of its length, or inclining a little more forward. The pain is generally severe and pungent, but in some cases dull and obtuse. Of course, this disease would soon terminate fatally, did not Nature come with her relief, by exciting the discharge before mentioned, which is to counteract the inflammatory violence; when this takes place, the foundation is laid in early infancy of what is designated Consumption.

Section XXVIII.

Consumption.

(See Part III. Section XXXIII.)

With this disease, how many thousands do we perceive travelling to all parts of the world, more especially hastening to, and sojourning in India, with the hope of re-

spiring a warmer and more genial atmosphere! When the inflammation on the membranes has arisen to a certain degree, the discharge takes place, as stated, from the conjunctiva of the eye, with this difference, that the membrane of the eye is subservient to applications; not so those of the lungs, to which we have no access. We can wash the matter from the one, but not from the other. The discharge on the membranes of the lungs continuing, concentrates into a purulent virus, which corroding those delicate and fine coats by the process of ulceration, and spreading, causes an increased discharge, which is expectorated by deep and difficult coughing, and is so irritating to the lungs, that the breathing becomes often exceedingly difficult, and the blood circulating through them, acquires an increase of inflammatory principle, which so increases its redness that all the fine vessels of the skin, especially the lips and the cheeks, acquire a lovely vermillion colour; while the excitement of the nerves of the lungs are such, that the whole system becomes affected with a high degree of sensibility, evinced, first, in the stomach and liver, in both which the secretions are diminished, and thus the food is moved on by the nervous excitement, not by the peristaltic motion, which is the natural effect of the stimulus of bile, and passes rapidly through the bowels, frequently unassimilated, and but partly digested. The breath, in consequence of these defective digestive evolutions, is perfectly sweet and untainted, unless the ulcerations in the lungs are very great; then indeed, the breath is of a fœtid, cadaverous taint, which is peculiar to this disease. In consequence of this deficiency in the nutrition of the body, it gradually declines in strength and muscle; while the nervous irritability, giving additional stimulus to the whole system, renders the eye beautifully brilliant, quickens the operations of the mind, produces a high degree of sensibility, excites enthusiastic feelings, affects the imagination, calls forth sympathy and pity, and animates the spirit of devotion. In this general excitement of the system, there is more vividness or brilliancy of imagination, than cool,

deliberate reasoning, the result of a sound constitution of mind. I have also observed, that these patients are generally more amiable and good, and possess more religious feeling, than others. Although the faculties of infancy are not raised so high, yet their exercise bears the marks of maturity so apparently, that it is a common nursery remark, "Dear me! that dear infant is quite an old woman in understanding! Oh, poor little dear! it is too sensible, and *moreover, by far too good.*" At other times, the inflammation does not affect the lungs by proceeding along the wind-pipe, but proceeds and attacks the stomach, and is called Inflammation of the Stomach.

Section XXIX.

Inflammation of the Stomach.

(See Part III. Section XXXIV.)

This is a very rare disease. It is attended with great pain and excessive heat over the pit of the stomach, painful and almost continued hiccup; incessant vomiting; a constant call for water, which when drank, by increasing the irritability of the nervous coat of the stomach, excites instant spasm and difficulty of swallowing. There is much aberration and confusion of the mind; the skin at one time is hot, dry, and parched, at another cold and clammy; and the white of the eyes are suffused with blood. If the disease is at all moderated by the interposition of nature, then an Abscess in the Stomach takes place.

Section XXX.

Abscess in the Stomach.

(See Part III. Section XXXV.)

This is known by the hot feel of a dry, parched skin, changing into a cold shivering; and the pain, which was previously felt internally, now going off, matter is form-

ed within the chest, sometimes to a very great extent. An exceedingly unpleasant, warm skin is now felt, with a deep, quick cough; the eyes sink in, and the little patient is deplorably reduced. The tongue is parched, foul, and clammy, with a thick, glutinous matter, which surrounds the whole of the teeth. The nights are sleepless, from a nervous irritability; and the screams of the little patient are incessant. Such is the progress of inflammation and its consequences to the stomach. It will be necessary to add, also, that at other times, it affects the fine membrane which lines the coat of the bowels; it is then designated Inflammation of the Bowels.

SECTION XXXI.

Inflammation of the Bowels.

(See Part III. Section XXXVI.)

Violent pain in the bowels, generally about the navel, is one of the first symptoms of their inflammation. On some occasions it advances, by paroxysms, and then remits. At other times the whole stomach is affected, especially with flatulency; great coldness of the hands and feet ensue, with rapid prostration of strength. The bowels occasionally contract, from great nervousness, so much so, that the pipe for an injection cannot be introduced. Flatulency in the stomach, nausea, violent retching and vomiting, rapidly ensue. The tongue becomes dry with intense thirst, the urine is pale and transparent, the breathing laborious and quick, and the patient is often bent double from agonizing pain. An abscess is the consequence, if these symptoms increase. This is known by very marked symptoms, which we shall proceed to consider.

Section XXXII.

Abscess in the Bowels.

(See Part III. Section XXXVI.)

This is a very common disease in India, and is frequently known by the name of Dysentery. It must be borne in remembrance, however, as I have shown in other parts of this work, that abscess may be idiopathic in the bowels, as well as in the liver. The inflammation of the bowels would have run to an enormous extent, and destroyed our little patient, had not nature again interfered, by forming this accumulation of purulent matter. This is formed to such an extent, that the patient is relieved from excruciating pain; the bowels are all at once released from their contraction and tenseness; so that the infant sufferer, when apparently taking the last inspiration, suddenly breathes freely, and the bowels are now copiously opened, but with matter exceedingly offensive both to the nurse and mother. This offensive matter is thought to be the mere confined fæces, when it is indeed the discharge of one or many abscesses. The fæcal matter, having been accumulated in the contracted bowels, is passed off in little lumps, while the discharge is an extremely offensive purulent matter, streaked with blood, which is the effect of the sores at the bottom of the abscesses, being irritated every time this matter is discharged at stool; great straining is experienced, and excessive pain in the bowels; great reduction in the child's appearance ensues; the countenance at times is quite emaciated, and the infant becomes a mere skeleton; a very peculiar, cadaverous smell accompanies the dejections, which are frequent, as well as small and difficult. Inflammation at other periods attacks the same membranes, covering the kidneys and bladder; it is then called Inflammation of the Kidneys and Bladder.

SECTION XXXIII.

Inflammation of the Kidneys and Bladder.

(See Part III. Section XXXVII.)

Without exception, this is one of the most distressing complaints imaginable, that infancy can experience. A violent and pungent pain is felt over the loins, and shooting down the groins into the urinal passages. The urine is almost suppressed, or passed by drops, and with extreme agony. The little sufferer is bent double; violent vomiting ensues, the bowels being generally pent up; the pain extends over the bottom of the belly, below the navel, where the skin is tense, sensible to the touch, and rather tumefied; great restlessness ensues, and the skin becomes hot and feverish. The child at this time, feels a constant bearing down, as if it had an inclination to stool. The dejections are usually passed in hard, little lumps. The anxiety of the poor little sufferer is exhibited in the countenance; the hands and feet are cold, while the rest of the body is hot and burning. The medicatrix naturæ* now interferes, and forms an abscess in the bladder.

SECTION XXXIV.

Abscess in the Bladder.

(See Part III. Section XXXVIII.)

The abscess is sometimes formed in the kidneys; when it is so, it is generally mortal. I shall not, therefore treat of it. When the abscess is formed in the bladder, the pain moderates instantly; the urine freely passes, with a discharge of matter with bloody streaks, which is purulent and offensive. This continues for some time, and the pain, which was pungent, becomes obtuse; that which was felt in the bladder and back is now only experienc-

* Expressing that healing power, by which an animated body, when diseased, regains its healthy actions.

ed slightly, along the urinal passages, and is particularly increased on making water. Inflammation, at other periods, with some children, only attacks the membrane which covers the liver, and is then designated Inflammation of the Liver.

SECTION XXXV.

Inflammation of the Liver.

(See Part III. Section XXXIX.)

This is thought to be a very common disease in India, both in adults and in infants; but it is, as well as all the inflammatory diseases, which I have here mentioned, exceedingly rare. Diseases of the liver having been misnamed *inflammation* has arisen, I suspect, from the common occurrence of the formation of matter in the liver; but I must here remark, that a collection of matter may take place in a gland, without any previous inflammation. In scrofula, for instance, there is no previous inflammation; nor in indolent tumours, in swelling of the lymphatic glands, in encysted tumours, nor in lumbar abscess. On the above formations of matter, the following are the remarks of Mr. John Hunter.

"All those formations of matter, not preceded by inflammation, nor a consequence of it, are, I believe, similar to each other, having in this respect one common principle very different from inflammation."

Indeed, in the liver attacks of India, there is often freedom from pain, which is never the case in inflammatory affections. It would be a novel pathological phenomenon, to lay it down as a rule, that where there is inflammation there is absence of pain. Inflammatory affections do not ordinarily attack in tropical climates; they invariably belong to Europe, where disease, especially in the liver, is almost without exception inflammatory. In India, on the contrary, they are generally diseases of the nerves, or what may be termed spasmodic diseases.

I know no disease, which has excited the attention of medical writers more than the one under consideration;

and I know none, after my long experience in all parts of India, to be more erroneously described in what medical men call pathology*. As far as my own knowledge extends, the delineation of the present day is entirely of obstruction in the ducts and loaded liver, rather than of inflammation; but as this work is not designed to expose erroneous deductions, I shall proceed to mention the characteristic symptoms of this affection. The child will show signs of violent, excruciating pain in the region of the right side, extending sometimes to the stomach, bowels, and to the top of the right shoulder. The infant cannot lay upon the side affected: the bowels and right side are hard, tumefied, and glassy, and exceeding tender to the touch; violent thirst ensues, with constant vomiting; swelling of the lower extremities; and the veins of the neck and head are distended with blood; the bowels are bound, and the most powerful purgatives often fail in moving them; when moved, the dejections are passed in hard lumps. There is considerable feverish heat, with a parched dry tongue; a deep, hollow, and frequent cough, with much difficulty of breathing. A lady, I am informed, who had an attack of inflammation in the liver, in England, had recovered from the acute form; but it having assumed afterwards the chronic character, it was mistaken for a disease of the lungs, and her medical advisers in Europe declared that she was in a galloping consumption, and recommended India as the only place in which she could possibly recover. Like a drowning person, who will catch at a straw, when there is a prospect of prolonging existence, although painful, she followed the directions given, arrived in Calcutta, and placed herself under the professional attendance of the late eminent and humane Mr. Cheese. He soon proved to the fair sojourner how greatly her disease had been mistaken, by restoring her to health, and sending her forthwith back to her native land, for a restoration of strength. I mention this case to illustrate the fact, that the symptoms of diseased liver are very analogous to in-

* From the Greek words *pathos*, disease, and *logos*, discourse; but which literally means, a faithful delineation of the symptoms of disease.

flammation in the lungs; in short, it is an inflammation of the membrane which covers both, and not unusually extended to the lungs, inducing disease both of the liver and lungs at the same time. When the inflammation runs to a very great height, then a certain consequence is Abscess in the Liver.

SECTION XXXVI.

Abscess in the Liver.

(See Part III. Section LX.)

The pain, which was exceedingly violent, now moderates, and the tense and tender touch of the side is no longer felt, unless the fingers are passed under the ribs; a prominent swelling, however, at the front part, back, or under part of the ribs is often felt: and if the fingers are gently patted on the swelling, a fluid will sensibly crepitate under them. It is frequently the case, that the abscess in the internal side of the liver cannot be distinguished, nor can it be known that one has been formed, until a vomiting and purging of its contents put all doubts aside. When abscess takes place, the countenance becomes exceedingly thick, sallow, and heavy, the eyes having a red and yellowish tinge; there is a loss of appetite, with a constant bitter taste in the mouth, and the tongue is covered with a thick, yellowish crust; in the right side is a sense or feeling, as if a heavy weight were attached, and an obtuse pain, as if a person were pressing against the side; immediately after eating, a fulness is felt all over the bowels and stomach, and a general oppression and depression; consequently, when an infant is affected with this alarming disease, it is easily to be conceived what must be its sufferings. The dejections are always scanty, composed generally of mucus and slime; the urine is equally diminished, and ordinarily of a deep red colour, or very pale. Besides this inflammation, there is also Inflammation of the Brain.

SECTION XXXVII.

Inflammation of the Brain.

(See Part III. Section LXI.)

This is not uncommon in India; on the contrary, it is one of the most ordinary diseases during infancy. The inflammation attacks the same membrane which covers all the convolutions of this important organ, and its *entre* is often sudden, terrific, and fatal; at other times, progressive and curable. It commences with a dry, hot, and parched skin; the eyes look wild and glassy; and the little vessels of the delicate conjunctiva become filled with blood. The whole attention of the infant is directed to something before the eyes; and the hands are raised towards the head, where there is violent and indeed excruciating pain; great sickness of the stomach ensues, and the screams of the poor little sufferer are truly terrific. The veins of the head swell, and the arteries in the temples throb considerably; the eyes become fixed, sparkle, and have a fierce aspect. The little patient makes furious attempts to leap out of the arms. The tongue becomes dry, rough, and black; there is a coldness of the external surface, with a chattering of the teeth, and a trembling of the hands; the infant sufferer seems to be gathering something, and keeps pulling the bed-clothes towards the neck; the dejections are usually watery, while they begin to run off involuntarily, or sometimes they are suppressed; great stupor ensues, hiccough, convulsion, and trembling of the tongue; but suddenly all the violent symptoms cease, and others appear, which are mentioned in the following.

SECTION XXXVIII.

Abscess in the Brain.

(See Part III. Section LXII.)

A sudden cessation of pain takes place, with rigors; the countenance, from being furious and distorted by enduring apparent agony, is at once tranquil and com-

posed; but a considerable drowsiness ensues, and the little patient cannot be prevailed upon to open the eyes; and while it lies upon the bed with this stupor upon it, its breathing is attended with considerable snorting at the nose. The moisture upon the skin is now rather cold and clammy; the eyes sink into their little sockets, the sides of the nose collapse upon the division in the centre, and there is a pale yellow upon the skin, with white drops of perspiration standing upon it. Great difficulty in breathing; swelling of the legs, hands, and frequently great emaciation ensue, with total inability to retain any thing upon the stomach; there are also constant convulsive startings. Such are the direful effects on this membrane when inflamed. This covering pervades the whole body, so that when inflammation pervades the covering on the fangs of the teeth, it produces toothache; when it is at the foot of the finger nails, whitloe; and when in the toes and feet, chilblains; when in the covering of the spine, it terminates in what is called the Rickets.

SECTION XXXIX.

Rickets.

(See Part III. Section LXIII.)

This disease shows itself in a flabby tumour of the head and face, a loose flabby skin, a swelling of the belly, and a general wasting. The veins of the neck swell, the joints of the knees and hips become exceedingly prominent, while the legs are actually crooked; the child expresses a dislike to sit upright, and in short, feels incapable of rising; frequently the head increases in size, and the chest is compressed at the sides; the teeth decay, and become quite black; there is always great paleness, as well as swelling of the countenance; the bowels are likewise exceedingly loose, and the flesh all over is flabby, and hanging loose upon the bones; in short, the child becomes a most miserable object.

From the general history given by physicians of this disease, it would lead us to conclude that the disorder is often idiopathic, since it seldom attacks children till they are nine months old, or after they are two; but it ordinarily happens in the intermediate space between these two periods. On this account I conclude that the irritability during dentition irritates the membrane covering the spine, and terminates in this effect. That it was believed to be idiopathic was from the disease showing itself by a flaccid tumour of the head and face, flabby skin, a swelling of the abdomen, and falling away of the other parts, especially of the muscles, and on account of protuberances which appear about the joints, because the jugular veins swelled while the rest decrease. If the child had commenced walking before the accession of this disease, there is a slowness, debility, and a tottering motion, inducing a constant desire to sit, and afterwards of lying down, insomuch that nothing at last is moveable but the neck and head. Although these symptoms do follow upon one another, they are still, in my opinion, the results of inflammation. As the child grows older, the head is greatly enlarged.

There is another disease produced, but very rarely in infancy; this is an inflammation of the same membrane which goes over the different joints; it is then designated Rheumatism.

SECTION XL.

Rheumatism.

(See Part III. Section LXII.)

The child is continually moaning and crying, and every enquiry is made into the cause, but it is not to be discovered, unless the child is old enough to mention, and point out the seat of pain; considerable emaciation ensues, with a collapsed and very unhealthy countenance; the legs and arms decrease in flesh; indeed, scarcely any thing is to be observed, excepting the bones.

The enlargement of joints at length decides the true nature of the disease.

There are many other causes of inflammation besides those arising from checks of perspiration; as any extraneous substance in the stomach or bowels, such as acrid, stimulating food; mineral poisons from cooking food in copper pots; or from blows and injuries, &c. to detail which would needlessly enlarge this work. My object has been to be as brief as possible in the symptomatic description of disease, as I do believe it will be better understood; and I think I shall the more certainly succeed in obtaining an attentive perusal of their history from my readers.

SECT. XLI.

Worms.

(See Part III. Sect. LXIII.)

The frequency of the generation of worms in the bowels of infancy is almost incredible: the symptoms which they induce bear so great an analogy to organic affection of the brain, that the cerebral functions are often treated as the seat, instead of the intestinal canal.

The most violent convulsions have arisen solely from worms. A wasting away is another consequence. At other periods, they produce scarcely any effect whatever. According to my experience, however, it is rare indeed to find worms in children of respectable parents, to that extent they are ordinarily discovered in the stomach and bowels of poor people. I have long since, therefore, formed my opinion on their cause and mode of formation. From the nature of the stomach and bowels in the human subject, there is nothing to prevent both insects and worms, or their ovula, generating and existing in those channels: when we contemplate the situation in which worms exist, as in the earth, in walls, &c. it is indeed probable that the stomach and the bowels would be a desir-

able habitation, and where they would receive nourishment and germination.

But before I proceed further to state their manner of formation, I shall premise by describing the several species which have been found in the human stomach and bowels; and to prevent any mistake, illustrate the description by appending a plate. The classification is by Dr. Hooper into orders, species, and genus. For the better understanding of such of my readers who are not acquainted with scientific division or arrangement by what is termed *classis*, from the Greek to divide, I must mention, that it is an appellation given to the most general subdivisions of any thing, contrived for greater perspicuity: thus animals are subdivided into *classes*, as quadrupeds, which are again subdivided into *orders*, and these into *genera*, and then into *species* or varieties. By this simple arrangement, the order depends upon the class, the genera upon the order, the species and varieties upon the genera. Dr. Hooper has classed worms in two orders.

1. ROUND WORMS.—Genus first*, are intestinal ascarides: they have round bodies, obtuse heads, and three vesicles. The first species of this kind are termed the Ascaris Lumbricoides; they are so called from lumbricas, a lubricitate, from its slipperiness. They are from twelve to fifteen inches in length†, and in circumference equal to that of a goose quill: the head is to be distinguished from the tail by a small contraction, very obvious when the worm is lying down.

These worms are generally found in the small intestines; ordinarily with the natives they are in the stomach. I have had a child under my care who used to pass about twelve daily. Dr. Hooper mentions his knowledge of a girl, who passed two hundred in the course of a week. Between thirty and fifty is considered a common number, but they are often solitary. When they are recently excluded, they are transparent, and apparently as if they had

* To explain this term more fully, genus denotes a class of being comprehending under it many species; consequently quadruped, for instance, is a genus comprehending under it almost all terrestrial beasts.

† See Plate XV. Fig. 10.

been sucking blood: this colour, however, soon disappears, and they become at length of a light and opaque yellow*.

We shall now proceed to consider the second genus; these are called the Intestinal Trichurides, from the Greek, a hair, signifying the long hair-worm; the body of this kind is round, tail three times the length of the body. The most common is a long kind of thread-worm, and almost always in the dejections of children. As this worm is all tail, the French significantly call it *Lé ver à queue*†.

Let us now consider the second order, the flat worms; the first genus of which is the tape-worm, which professionally is called Tænia, from the Greek, signifying a fillet, so named from its resemblance to a piece of tape.

This animal consists of a head, placed at the smallest extremity, and a chain of articulations, more or less broad or long, which gradually enlarge as they advance, but at length terminate in a tail, formed by a rounded joint: each of these joints contains its proper viscera. The essential character of this species consists in what is technically called *oscula*, (from *os*, a mouth, signifying a mouth or orifice,) being situated upon the margin of each articulation. In this species of tænia, the joints differ very much in the same worm. Their figure is by no means characteristic. They are, for the most part, oval, rhomboidal, oblong, or quadrangular, and generally have a great resemblance to large cucumber seeds, from which circumstance the detached joints have been named professionally Cucurbitina. They are shortest near the head, and their length towards the tail is sometimes exceeded by their breadth‡. These latter worms are verycom-

* Fig. 10. represents the worm as it appears when recently voided from the bowels; *a* the head, *b* the tail, *c* the depressed band, *d* an aperture, *e* the line extending from the head to the tail, *f* the gygrated or circular apparatus as it appears through the skin of the worm.

Fig. 11. exhibits the viscera of the worm in their natural situations.

Fig. 12. represents these unravelled.

Fig. 13. represents the worm as excluded.

Fig. 14. represents the section exposing the viscera.

† Plate XV. exhibits these worms both convoluted and straight, Fig. 15 and 16.

‡ Fig. 1. Plate XV. is a portion of the tape-worm, of the natural size, and usual appearance: *a a* are the marginal oscula.

monly found engendering in the human intestine. I have myself had two patients, incredible as it may appear, who have passed a tape-worm measuring eighty feet in length. The symptoms produced by these animals, are wasting away without any evident cause, a keen appetite, with a constant nausea and sickness of stomach. Detached joints are occasionally passed, but not always noticed, as they are ordinarily supposed to be some indigestible portion of food which have been taken. On the origin of intestinal worms the profession differs in opinion. The inhabitants of Lincolnshire, according to Dr. Darwin, are peculiarly subject to worms, which he of course ascribes to the drinking of water. Baglivi makes similar observations respecting the residents among the marshes of Holland. It is not to be doubted, that the larvæ of some insects have been found in the human stomach, according to Dr. Crumpe; and Dr. Barry declares that he has seen a number of them, evidently different from each other, and arising from different insects, discharged by stool and vomiting, by a woman and her daughter, the latter of whom was eight or nine years old. I am decidedly of opinion, from my own experience, that the intestinal worms are capable of developement, of sustaining life, and attaining maturity, without as well as within the human stomach and intestines. In all parts of India, children who drink promiscuously of cold water, which has not been previously boiled, are subject to these and every other species of worms: which are productive of many diseases. Indeed, I have in ordinary cases invariably believed the worm to be formed from the water, which is generally drunk; and I am happy to find, by the following interesting account from the pen of Dr. Barry, in the Irish Medical Transactions, that my conjectures have not been ill grounded.

Plate XV. Fig. 2. a portion of the same worm injected, to shew the intestinal canal.

Fig. 4. the head of the natural size.

Fig. 5. the head magnified.

Fig. 6. a direct or front view of the head very much magnified. C the mouth.

Fig. 7. is a detached joint of the natural size. Figures 8th and 9th are other specimens.

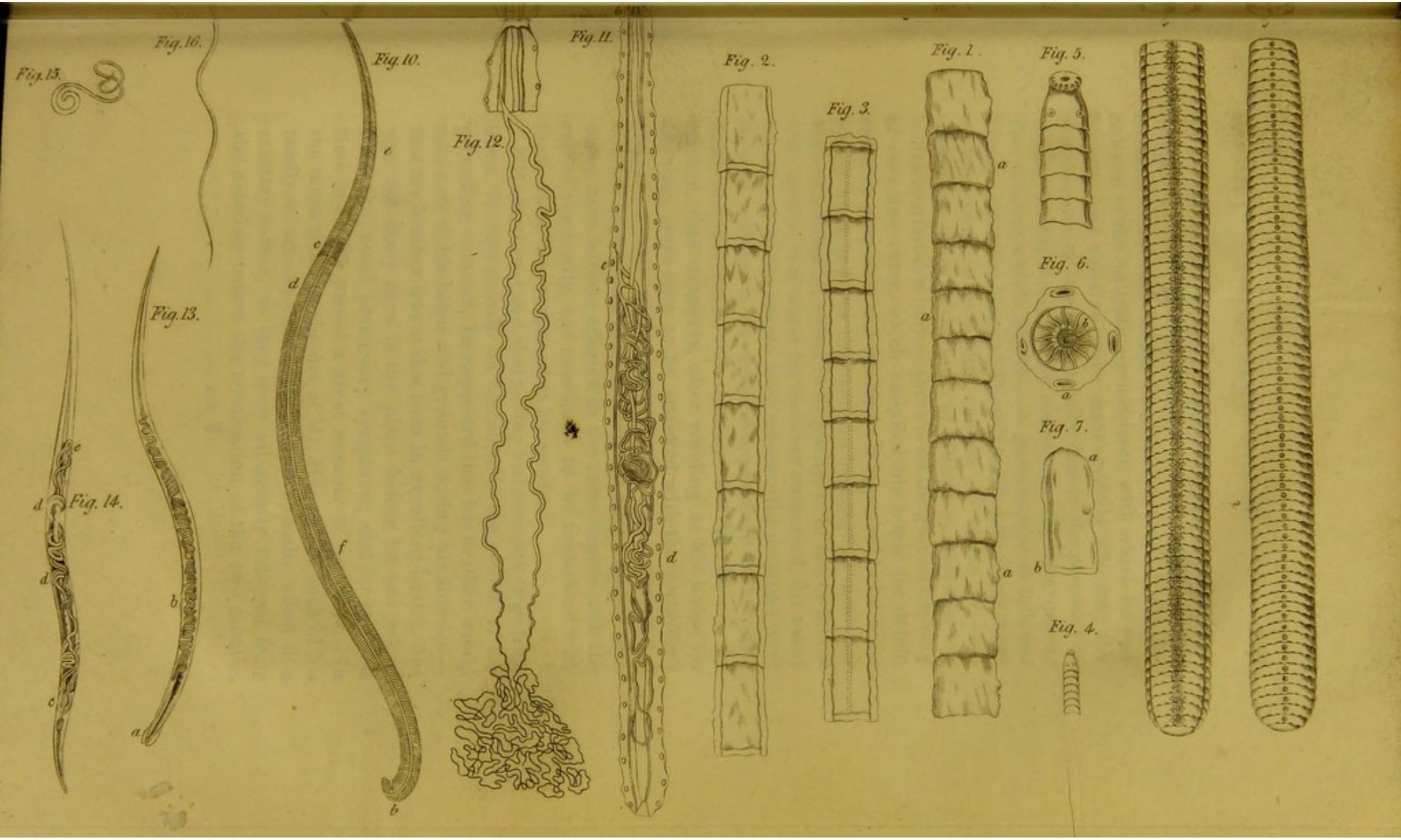


Fig. 15.
Fig. 16.
Fig. 10.
Fig. 11.
Fig. 12.
Fig. 13.
Fig. 14.
Fig. 2.
Fig. 3.
Fig. 1.
Fig. 5.
Fig. 6.
Fig. 7.
Fig. 4.

"In the month of April, 1797, Mr. H——, from the neighbourhood of Macromp in this county, consulted my late lamented friend, Doctor Longfield, and myself, for the removal of the *ascarides vermiculares*, with which he and his wife and children were most severely afflicted; the symptoms were such as usually denote the presence of worms of this class, and do not require any description. The account which Mr. H—— gave us was as follows. The *ascarides* first attacked himself and family about three or four years before, after coming to reside at —— within two miles of the town of Macromp, where he has built a comfortable house: there is on the ground a spring of very fine water, which supplied his house for drink, culinary purposes, and washing: it appeared to be of the purest kind, and was the common beverage at meals for himself and family, either in its purity, or in tea, or mixed with spirits; this water he however suspected, for many reasons, to be the source from whence the *ascarides* were derived. There is no unusual appearance in the water itself to countenance this opinion: but Mr. H—— remarked, that strangers, after residing at his house for any time, were sure to be attacked with the *ascarides*: several servants who lived with him have never failed in a few days to pass those worms, and after a longer residence have become affected in the same degree with the rest of the family, and continued to be tormented with them while they remained in his service.

"He further stated, that having had occasion to go from home for two months on business, in the course of the preceding summer, he requested that his brother would take care of his house and grounds during his absence—that his brother was at that time in excellent health, but was not many days in the place before he was seized with the usual precursory symptoms, and for the first time in his life passed a great number of *ascarides*. In the mean time the absence of Mr. H—— and such of his family as accompanied him, had an opposite effect of a salutary nature, as they were all greatly relieved from the *ascarides* before the termination of the two months,

without having had recourse to medicines of any kind. He had, however, no sooner returned to his own house, than his old enemies again assailed him, and those who had enjoyed a temporary cessation from pain and uneasiness by having accompanied him, with all their former virulence: and have never since ceased to torment him and his entire family without distinction. After prescribing an artificial Harrogate water, and giving some directions, Doctor Longfield and I were both so struck with the preceding facts, which seemed to lead pretty clearly to the conviction, that these worms were derived from the water of the spring, that we requested Mr. H—— to examine the water very minutely from time to time, in order to ascertain whether the worms might not actually be discovered in it, at certain seasons. Having, some time after, had occasion to pay a professional visit to Macromp, I met Mr. H——, who informed me that such was the continual uneasiness and torture which he and his family experienced from the *ascarides*, that it nearly destroyed all enjoyment of his existence: and forced him at length to leave his residence, and come into the town of Macromp to live. It was with the greatest reluctance that he was induced to take this decisive step, as it was in other respects his interest and his inclination to remain: but he declaed that the sufferings of his family admitted neither of palliation or cure by ordinary means: the evil seemed daily increasing, and his flight was accelerated by a discovery which had been recently made by Mrs. H——, who in her daily visits to the spring, on which their suspicions had been long fixed, actually discovered myriads of dark-coloured little worms in the water, which resembled in every respect, but in colour, the *ascarides* which the family were in the constant habit of passing from the bowels. The cause of their sufferings was now demonstrated beyond dispute, and it appeared to him that there was no other alternative but removal, to save them from protracted uneasiness, pain, and anxiety. Mr. H—— concluded by stating, that the worms were at that very time visible in the well, and that he wou d have great pleasure in accompanying me

to the spot, that I might be enabled to decide for myself on the truth of his report by actual observation.

"As I felt considerable interest in the subject, I accepted Mr. H——'s invitation, and rode to the place, which is situated about two miles from the town of Macromp, in a western direction. The spring was in the centre of some marshy ground, adjoining a coarse schistous rock to the north, and on the south by the river Lee, which divides into several channels at this place, and forms numerous woody and marshy islands. On agitating the water of the spring gently, I perceived incalculable numbers of little animals moving rapidly through it in all directions. I immediately caused some of them to be taken out by means of a jug, that I might have an opportunity of closer inspection. They varied in length from half an inch and under, to nearly three quarters of an inch, tapering gradually from the head to the tail, which ended in a point. They were proportionably different in bulk, the largest being as thick as a stout packthread, and the smallest so minute as to be scarcely visible without the help of a magnifier; with others of all the intermediate degrees of size. The colour of the largest worms, and those of a middle size, was dark brown when taken from the well; but upon wiping them gently with a napkin, the colour changed to a very pale yellow, of which colour were numerous small worms; some of which, as I have stated, were visible only by the help of a magnifier.

"Upon comparing the worms of the well with those discharged from the bowels, the resemblance was exact in shape, and external appearance. The largest worms from the well exceeded in size those passed from the body, but not remarkably; and they differed also in being dark coloured. This difference of colour may be urged as an objection to the common origin of the *ascarides* from the well, and those of the intestines; but we have the authority of Hooper for the fact, that ascarides of a brown colour are sometimes discharged from the body; and there are numerous instances to shew, that animals as well as vegetables become light coloured by immersion in darkness. Thus Sennebier mentions, on the authority

of Scheele, that the *nereis lacustris* is red whilst living in places accessible to the sun's rays, and white when living in obscurity: and Mr. Dorthes* affirms, that most of the larvæ of insects inhabiting the interior cavities of animals, as well as of wood, fruit, the earth, &c. are white; and that having forced many of them to live under transparent glasses exposed to the light, their whiteness was gradually changed to a brown colour."

I trust a perusal of the foregoing account will induce mothers, before giving their children drink, to direct it to be boiled, and then strained; as I am decidedly of opinion, that by so doing, these animals will not form. I may say there is scarcely a native child in India who is not more or less afflicted with worms, and the cause, no doubt, is in the filthy dirty water they drink. Very many children of Europeans die solely from this cause. An instance is mentioned in Rust's Magazine, of a child two years of age, who had been for a long time sickly, very much emaciated, and subject to sudden spasms in the bowels, without the practitioner's being able to discover the cause of the ailment: at length it was accidentally discovered, that living worms were actually discharged by urine from the bladder. The symptoms of worms depends upon their effect on the bowels. They may merely occasion swelled belly, inordinate appetite, with a decrease of flesh. At other times they may produce irritation sufficient to effect fever: we shall then have the symptoms of fever. They may even excite greater irritation, and produce effusion in the brain: we shall then have symptoms of water in the head. They may at other periods cause spasm in the stomach and bowels: we shall then have the symptoms of cholera. They may produce inflammatory affections of the lungs and consumption: we shall then have symptoms of a pulmonary affection and spitting of blood. They may produce epileptic fits: we shall then have the train of nervous symptoms which accompany those paroxysms. So that for me to lay down any regular detail of symptoms, which is the custom of medical writers, would be to occupy a hundred

* Annales de Chem. vol. ii.

pages uselessly, in repeating the symptoms of diseases which are specifically detailed in other parts of this work. But some of my readers may urge their objections, from a desire to disbelieve that such are the awful results from the generation of worms. I shall therefore quote three cases of Hæmoptysis, (from the Greek words signifying *to spit*, and *blood*, because the disease is a spitting of blood,) shewing the coincidence of worms of the intestines with that disease, by Mr. Ramsey, from the 9th vol. Med. Chir. Trans.

"The object of the following pages is to express an opinion, that discharges of blood from the lungs are sometimes produced by the existence of worms in the intestinal canal, and to show the probability that the removal of them may be followed by a recovery of the injured lungs; while on the other hand, their remaining the unsuspected cause might with great probability be followed by a fatal phthisis. The opinion originated from observing the repeated occurrence of the two affections in the same persons, and was strengthened by other considerations; while some circumstances which will be mentioned, seemed to justify the opinion of their having a relation to each other.

"Case 1.—In December 1811, I was desired to see S. H. a young woman about twenty years of age, to ascertain if she were pregnant. She was unmarried, but had lately supposed, and upon oath declared herself with child; and it appeared probable that the period of gestation had expired, as she had spent some months in a female penitentiary, from which she had been discharged, because her enlargement had led to the opinion that she had entered the society in a state of pregnancy. She had now left it for three or four months. When I saw her, she moved with activity, and though looking large, was too small for a woman about to be confined. Her breasts were larger than formerly, yet they had not the appearance or feel of secreting glands. The areola was quite unaltered; the abdomen was large and prominent, not resembling the enlargement from a fluid in its cavity, but was of a more circumscribed form, like that of a dis-

tended uterus. The swelling was elastic and compressible, not having the hardness of a gravid uterus*. The os uteri† was low down in the vagina‡, and resembled that of the unimpregnated state. The uterus, examined *per vaginum*, felt as if it contained a large body of fluid. She had a constant discharge like that of the menses, which had now continued six or seven weeks.

"1812. February 1. She is in good health, gets no larger, therefore it is certain that she is not pregnant.

"June 15. Has had several violent attacks of Hæmoptysis, accompanied with convulsive insensibility and agonizing pain of her side. Her teeth are firmly closed during the convulsion; the blood thrown up is frothy and of a bright red colour, having with it no mixture of the contents of the stomach, or any appearance of its coming from that viscus. She has had cough for many weeks, and seems in great danger of phthisis.

"1813. October. Since the last date, the Hæmoptysis has returned occasionally, and sometimes in quantities not less than a pint. Finding also that she occasionally discharged portions of a tænia, I prescribed a dose of the oleum terebinthinæ§, which operated on the bowels, bringing away a considerable quantity of the worm. The tumefaction went down; the Hæmoptysis returned many times slightly, but at length ceased entirely.

"1815. She is reported to be well.

"1816. She was again seen in perfect health.

"Case 2.—Is stated from recollection; but was committed to paper while all the circumstances were fresh in the memory, it not being at first known to have any connexion with the subject of this paper.

"In the spring of the year 1817, I attended a young gentleman about ten years old, for many weeks, on account of a diarrhœa, for which he took a variety of aperient and astringent medicines without benefit. He had no fever, and seemed in general respects well, the diar-

* The womb in a state of pregnancy.
† At the neck of the womb.
‡ Passage to the womb.
§ Oil of Turpentine.

rhœa continuing obstinately to resist the effects of medicine. During the continuance of it, two lumbrici were passed at distant times, without appearing to produce any change in the state of the disorder. I was one night called up to him on account of the alarm which a coughing up of blood had produced in the family. The quantity was about an ounce, and certainly came from the lungs. He was bled, and had no return of it. Shortly after this attack, a third lumbricus was voided *per anum**, after which, as if the three lumbrici had been the source of the long continued bowel complaint, he immediately began to amend, and rapidly recovered. A very trifling cough was left, which gradually got well. I had an opportunity of witnessing that he remained perfectly well eight months after the recovery. In this instance of Hæmoptysis there was no spasmodic pain, as described in the preceding case.

"Case 3.—About three years ago, I was called to see a young woman, aged nineteen, in an advanced state of pregnancy, who was suffering from uterine hæmorrhagy†: she was also suffering from a violent Hæmoptysis. She looked pale and thin, and I conjectured that she would fall a sacrifice to pulmonary consumption. She completed her time, was delivered, and resumed her usual employment.

"I heard nothing more of her until I was called to her in her second labour, which was accompanied with convulsive insensibility. About twelve months after her second delivery I was again called to her, on account of her lying in a state of convulsive insensibility, accompanied by coughing up a large quantity of frothy and arterial blood, (certainly unmixed with any contents of the stomach.) I bled her largely, and sensibility was restored. Within a short space I was called several times to her under similar circumstances, and always found bleeding of temporary use. Having before remarked the existence of worms in patients affected with Hæmoptysis, I asked if any had ever been observed by the present patient, and was quickly answered in the affirmative. Some an-

* By stool.
† Hæmorrhage from the womb.

thelmintic remedies were exhibited, which brought away several lumbrici; soon after which I again lost sight of her. Upon her applying to me again at the distance of six months from the before-mentioned period, I found she was troubled with cough, that she frequently brought up blood in the quantity of two or three table-spoonfuls, and that she had passed two lumbrici within the last fortnight. Her appetite was generally good, except that she had a peculiar aversion to meat. I ordered a draught consisting of ol. terebinthinæ drs. vi. aq. menth. pip. oz. ss.* to be followed by an infusion of senna if it did not operate. Many stools were procured, and twelve lumbrici brought away. She continued to cough and bring up blood as before, but without any appearance of fever, nor could I discover that any symptom had been aggravated by the stimulus of the ol. terebinthinæ. The exhibition of turpentine was followed by an infusion of chamomile, given with a view to the improvement of the digestive organs; and on the following day she brought away twelve more worms. She continues still to cough up blood occasionally, but without any attacks of convulsion or insensibility.

"September 14. Within the last three weeks she has thrown up blood twice; still her appearance is improved; she goes to work in the harvest-field, and has passed only one worm since the last report, from which circumstance it may be presumed, however, that more remain.

"October 20. She has parted with nine more worms.

"As a farther proof of the occasional co-existence of worms with Hæmoptysis, I am induced to mention the following fact.

"J. H. at the age of fifteen years, was seized with Hæmoptysis, which recurred very frequently until he attained the age of twenty-five, when he died, I believe, consumptive. During many years of his life he was troubled with a tænia, and it was his custom to remove portions of it from the rectum† by winding it round a stick, in which way he used to exhibit it. No suspicion was en-

* Oil of Turpentine six drachms. Peppermint water half an ounce.
† The lower intestine.

tertained at the time that these two diseases had any connexion."

I shall now shew how spasmodic affections are connected with worms, by quoting a very interesting case from the 10th vol. Med. Chir. Journal and Review.

"Bonet, aged 34 years, of strong constitution, had enjoyed good health till the age of 19: at which epoch he experienced a first attack of epilepsy, without any apparent cause. The subsequent occasions became more and more frequent, till at length he had them weekly, and yet without any preceding affection of the head. Several physicians were consulted, and various remedies were tried, and without any benefit. Afterwards it was observed that the patient passed by stool some joints of the tænia. The means they employed to expel the worm were also unsuccessful. In 1818, when he consulted Mr. Gaube, he had, besides the usual severe attack, some accessions daily, of a milder kind, and which, though they did not cause him to fall to the ground, deprived him for half a minute, or so, of his faculties. At this time the following curious phenomena were observed as precursors to the regular attack, viz. A sudden difficulty of speaking, quickly succeeded by a sense of spasmodic constriction in the right side of the neck, ascending from its basis along the æsophagus, apparently, to the tip of the tongue, which organ was drawn to the right side at the moment. Sometimes the patient had sufficient warning to endeavour to catch hold of any furniture or other object within his reach, before the fall, which was always on the right side of his body. The paroxysm lasted from ten to fifteen minutes, during which, the anterior part of his neck continued very much swollen. After each attack, he felt, for an hour or two, a slight pain over the orbit of one of his eyes. He was generally able to go to work immediately after the paroxysms."

Our author, suspecting the irritation of the tænia to be the cause of the epilepsy, tried various remedies recommended for the expulsion of that worm, and with the effect of dislodging a very large quantity, but without evidence of the head or any part of the neck being included

in the portions expelled. Bonet's health improved after this, and he experienced an immunity from any severe paroxysms of epilepsy for the space of six months, when the attacks returned as violent and as frequent as ever.

"In 1823, Bonet was seized with a very severe inflammatory disease, commencing as a violent sciatica*, and afterwards taking the form of enteritis†, which reduced him to a very low ebb, and ended with symptoms of ascites‡. This illness lasted four months, during which he was free from epileptic seizures. In the course of a few months after his recovery, the epilepsy returned, and was attended with occasional discharges of some portions of the worm. On the second of June, 1825, Mr. Gaube administered the decoction of pomegranate bark, (two ounces boiled in a pint and a half of water to a pint, and taken at four draughts, in the course of the morning, fasting,) which brought away several fragments of the worm. On the 3d, the same dose, and the same result. On the 4th, the medicine was repeated, when 22 feet of worm were ejected in one unbroken piece, including the head of the animal. From this time Bonet exprienced no more epileptic paroxysms, and his health is perfectly re-established."

In conclusion, and which I trust will be perfectly satisfactory, I quote from the Journal General de Medecine, 1825, the Parallel between the Symptoms of the cerebral fever and worm fever of children, by Dr. Gintral, of Bordeaux.

"The similarity, or at least the analogy, of cerebral irritation and worm affections, or more properly speaking intestinal affections, in children, has deceived the most attentive physicians, and is hourly leading a great many practitioners into erroneous decisions and improper practice, in every country of Europe. How common is it to hear a man speak of the number of cases of acute hydrocephalus or brain fever he has had to treat, and the great many cures he has performed of such; when, in reality, three fourths of these cases were infantile remittent, or

* Rheumatic pain of the hip.
† Inflammation of the bowels.
‡ Dropsy.

intestinal fever. The following parallel, though far from being free from objections, may be of some use to the young practitioner at the bed-side of sickness. It may be premised that there is no one pathological symptom which can be depended on as characterising idiopathic cerebral fever, nor yet the intestinal. We must draw our conclusions from the whole of the symptoms taken collectively.

"1. Those children who are most disposed to worm or intestinal affections, are of the lymphatic temperament, weak constitution, and lax fibre. Those most disposed to cerebral irritations, on the contrary, are the robust, the active, the irritable, and of the sanguine temperament.

"2. The *former* have large bellies, and eat much. The *latter* have large heads, and the facial angle near the 90th degree.

"3. Children who have previously had worms or intestinal affections, are more disposed to have the same again, and, therefore, their previous history should be carefully enquired into. On the other hand, there is but too much reason to believe that the disposition to cerebral irritation is often hereditary, and, therefore, the history of the family is deserving of investigation.

"4. Female children are supposed to be more frequently affected with worms, and males with cerebral fever.

"5. This last (cerebral) affection often results from external causes, as blows on the head, falls, insolation, suppression of discharges from the neighbourhood of the head, or of cutaneous eruptions. The production of worms and of intestinal affections, is generally facilitated by all debilitating causes, bad diet, too much vegetables, pastry, salted viands, and improper drink; to which may be added, too much medicine.

"6. In cerebral fever we may have pain in the belly; but where there are worms in the primæ viæ*, this pain is much greater, and especially when the stomach is empty. It is relieved by the ingestion of food.

"7. Vomiting is a common symptom at the commencement of cerebral fever—it rarely takes place in worm

* The stomach and bowels.

affections, unless these animals ascend into the stomach, and then they are often discharged during vomiting.

"8. In cerebral affections the appetite is impaired or annihilated—in worm affections it is commonly augmented.

"9. In idiopathic cerebral affection the abdomen becomes flattened. Dr. Golis has particularly insisted on the importance of this symptom. Where worms are the cause of the fever, the belly is hard and distended—borborygmi* are heard, and there are eructations.

"10. Constipation is almost always an attendant on idiopathic cerebral fever, and when the motions appear, they are disordered, generally green, or slimy, or gelatinous. Worms, on the other hand, generally keep up more or less of diarrhœa, the motions being mucous, glairy, and fetid.

"11. In worm affections the secretion of bile is increased. Brera regards this sign as very remarkable. It seldom obtains in cerebral affections, where the mouth is generally dry.

"12. Cerebral irritations produce, in the beginning, redness at the tip, and along the edges of the tongue—worms, on the contrary, cause the root and middle of the tongue to be covered with a thick muscous fur.

"13. The breath is fetid in worm affections, but rarely so in cerebral.

"14. Cephalalgia is an almost constant symptom of cerebral affection. It is acute, and often causes the child to cry out, *Oh, my head!* In verminous† fever, the pain never arrives at this height. It is vague, obtuse, and the child seldom complains of it in particular.

"15. In cerebral affections, the child often directs his hand to his head—while in verminous diseases, it is more commonly to the nose that the fingers are directed, in consequence of the itching there.

"16. In both kinds of affection, the sleep is occasionally disturbed—but where the brain is the seat of lesion, the sleep is never natural—it is a kind of drowsiness, amidst which the moanings of the child are frequently heard—

* From the Greek words, to make a noise: a rumbling noise occasioned by flatus in the bowels.

† Connected with worms.

in worm affections the sleep is profound, though often interrupted by dreams and startings.

"17. In both affections we observe grindings of the teeth; but when there are worms, we will often perceive a movement of deglutition during sleep, hiccup, and occasionally certain convulsive movements of the thumb and index finger.

"18. The convulsions which we see both in cerebral and worm affections, may be very severe in either case, and greatly resemble each other; but in the *former* they are generally preceded by pain in the head, drowsiness, fever, &c. whereas, in the *latter* class, the convulsions are rarely ushered in by the symptoms above mentioned.

"19. The coma which we occasionally observe in verminous affections, comes on very suddenly; but does not last long, and often leaves no trace of its existence.

"20. The delirium, in cerebral fever, is very rarely violent—that produced by worms, occasions more agitation, and more extravagant actions.

"21. The paralyses that occur are always more serious and permanent in the idiopathic cerebral maladies—more partial, transient, and variable in the *verminous complaints.*

"22. Dilatation of the pupils often takes place in the *latter* class, and even before the attack of illness, in which case there is no aversion to the light—no affection of the sight. In the early period of cerebral irritation, the eye cannot bear light—the pupils are often contracted—and the dilatation that succeeds is only the result of loss of sensibility in the retina. In these cases there will be perceived an oscillatory movement in the iris, when a lighted candle is brought near the eye, and which M. Odier of Geneva, considers as an indication of effusion into the ventricles.

"23. Strabismus is a strong symptom of cerebral lesion, especially of compression—it is rarely observed in verminous diseases.

"24. In children affected with worms there is generally seen a dark circle round the eyes—a symptom but seldom observed in cerebral affections. In these *last* the

nostrils are dry—in *worm fever* they are moistened with mucous matters. In the *latter* there is often a puffy swelling of the upper lip, the same as is seen in scrofulous children. It is rarely the case in idiopathic cerebral fever.

"25. The complexion in worm cases is pale and leaden —in cerebral affections it is very variable, sometimes pale, but more commonly flushed.

"26. Rolling the head on the pillow is a sign of cerebral, rather than of worm affection.

"27. The pulse, as was before observed, presents, in cerebral irritation, great inequality, as, first frequency, then slowness, and then again great quickness. These modifications are not distinguishable in verminous affection. In these, the pulse is generally small, unequal, and occasionally intermittent.

"28. M. Cruvelheir has always observed the respiration unequal in hydrocephalic affections, a symptom which he considers as pathognomonic—but this phenomenon occurs often in other affections of children.

"29. The temperature of the skin is elevated in cerebral fever, but in worm-fever it is little above the natural level. In the *former* the heat of the head is much above that of the abdomen—while the reverse is the case in the *latter*. It is on this account that children with worm-fever always feel better after taking cold drink. The skin is also drier in cerebral, than in verminous affections.

"30. The emaciation in cerebral fever is very rapid and general—in verminous disease, there is also marasmus, but it is not near so rapid. It is particularly observable in the extremities, while the abdomen preserves its size.

"31. In cerebral fever the urine is very scanty, red, and sedimentous. In worm fever, the urine is sometimes clear and plentiful—more frequently troubled like whey, and letting fall a whitish sediment.

"32. In verminous affections, there is much instability in the symptoms—thus coma, delirium, blindness, aphonia*, &c. succeed each other with rapidity :—while, in cerebral fevers, we find a greater obstinacy—a more sustained march of the symptoms, which are regularly progressive.

* A suppression of the power of utterance.

The foregoing parallel or contrast, call it which we may, appears to be drawn from the observations of the best practical writers on the two diseases, and is well deserving attention from the young practitioner. It must be remarked, however, that whatever be the original seat of the disease, when the head becomes affected, even sympathetically, we must attend carefully to that feature of the complaint. Nor does this part of the treatment interfere with that which is properly directed to the expulsion of worms, or the removal of bad secretions from the primæ viæ. These last very frequently determine cerebral irritation, in certain constitutions, and lead to hydrocephalic effusion in the end."

SECTION XLII.

Vaccination.

(See Section LXVI. Part IV.)

When we peruse the history of that fatal scourge of the human race, the small-pox, and view the cow-pock inoculation in the flattering light in which it is so deservedly held, after a range of years' experience, we raise our pious devotion to a merciful God for a remedy so benign in all its operations for the relief of suffering infancy.

We are aware, that there are many, who have experienced disappointment, in finding their children, when supposed to have been vaccinated, attacked with the small-pox, and have in consequence set down this blessed boon to man as a system in physics hypothetical, a medicinal specific not substantiated, but merely presumed, fallacious, and controvertible.

It would be a waste of time in me to offer arguments against the power of opinion, which is too often biassed, either by some early prejudice in favour of the small-pock inoculation, or from the supposition that the benign vaccine has sometimes failed.

But, as I was a superintendent of an institution for vaccination during three years, in one of the largest

civil stations in the Upper Provinces, I trust I may come forward, furnished at least with experience, to advocate cow-pock inoculation. When I first entered upon the duties of that situation, a long time elapsed before I could form, or procure a proper vaccine pustule; and when procured, it was difficult to preserve it pure and good throughout the burning months of May, June, July, and August: but I happily succeeded in overcoming these obstacles, and I think, at one time, there could not have been finer vaccine than mine in any part of the world. Having said thus much, I need not add how anxious I was to preserve what I had with such difficulty obtained; but I found my attempts in this endeavour futile: not that I lost the pustule, but in the circumstance of the pustule running into a virulent, offensive, ichorous discharge, degenerating into another disease, and no longer vaccine.

Now what was the cause of this? is a question I really cannot answer; but I have often thought the degeneracy must have arisen from the many constitutions it had gone through. True it is, I would no longer use that matter, as I do fully believe those patients, who were vaccinated with it, were not preserved from an attack of small-pox. While, therefore, this was my opinion, I was justified in acting up to it.

Now I wish to enquire of my readers, whether we have not grounds to fear, that it is probable many children have been vaccinated with this deteriorated matter, and as a consequence taken the small-pock?

Another strange circumstance is, that many children will not take the vaccine: some have been vaccinated twenty or thirty times without effect. This often arises from the manner in which the virus is introduced, the absorbent system being more torpid in some than in others. From considerations of this kind, therefore, I have determined to recommend a mode, under the article Treatment for Vaccination, differing from the ordinary practice. In that article I shall describe the pustule, and finally illustrate it with a plate.

Section XLIII.

Cholera.

(See Sect. LXVII. Part IV.)

It is pretty generally known, that few in my profession have seen so much of this awful pestilence as myself in all its forms, in different situations, and during all seasons. The result of that experience I drew up, with an account of the treatment I had adopted, and found remarkably successful: this was contained in a single sheet, and printed copies of it were distributed, by order of the Marquis of Hastings, and the Governors of Madras and Bombay, to the medical officers at the different stations throughout India. In August 1818, I put it in the form of a small tract; but as the press was in Calcutta, and myself in Central India, I only printed a few copies, as I merely wanted an opportunity, when I could myself approximate near to the Presidency, to superintend the press, and publish a well digested work, with due regard to arrangement, on the subject. That opportunity, however, has not offered; and since that time so many works have appeared on the subject of this disease, that I some time ago relinquished my original intention of publishing the work I had then contemplated.

From these remarks, it will be perceived that I am well informed on this awful visitation. True it is, however, that although I have witnessed so much of its destructive ravages amidst adult population, I cannot say, and I rejoice to mention it, that I have seen one single instance of a real attack of cholera among my infant patients, saving at those periods when the disease was epidemic.

To say that infancy is not attacked with it would be to declare, that pestilence and epidemic do not sweep away young as well as old: indeed, this would be an erroneous and false conclusion; a melancholy negative might be given to such an assertion by every military man, who shared in the painful scenes of the march of the centre division of the grand army, in the late war, when whole

families went forth in the morning in the finest health, accompanying their regiments, and before reaching many miles, were attacked and found dead on the banks of tanks and nullahs, to which the craving thirst and burning heat of the stomach and bowels, symptomatic of this disease, had driven them, in the hope of meliorating this agonizing sensation. But I intend to assume, that infants are seldom attacked, in comparison with adults; and although instances are repeatedly mentioned in the obituary columns of newspapers, it would be presumption in me to say more than that they are exceptions to my experience. It has been before mentioned to my readers, that symptoms of this disease appear in infancy, and are produced by acid in the stomach; and as this preternatural accumulation occurs when children are from 12 to 18 months of age, vomiting and purging, attended with spasms, are a consequence. Now it is important to bear this in remembrance, because the remedy is simple and certain; not so of spasmodic cholera, which is an effect too often of a permanent check to perspiration*. The former disease therefore is trivial, when compared with the latter.

If my readers have read attentively the whole of the Second Part of this work, they will be able themselves to ascertain what are the symptoms of cholera; they are those of suppressed perspiration. The first effect, therefore, is, that the arteries, in their large vessels, become overloaded, and the bowels are distended with blood, the liver filled, and consequently the stomach and head. The second effect is, an increased exertion on the part of the nerves to remove the load, and to push the blood onward. The third effect is, the urine becomes also hot and scanty, indicative of confined and accumulated heat. The fourth effect is, on account of the quantity of accumulation, there is no desire for replenishment; therefore, no appetite. On these grounds, we account for the depressing sensations of lassitude and fulness. The fifth effect is, that all the

* Section II. page 94.

secretions are lessened, because there is no replenishment; therefore, there is a deficiency of pancreatic juice and bile, evinced by loss of appetite and vomiting; of saliva, by a parched tongue; and of urine, by scanty discharges*. Other symptoms follow these. The increased exertion of the nervous system excites the action of the stomach and bowels to such a violent degree, that their contents are soon discharged. The violent excitement continuing, nothing but a watery fluid is passed, the nerves of the whole system partake of this morbid irritability, and spasmodic cramps draw in the toes and fingers, and contract the muscles of the limbs into large balls: thence the muscles of the bowels are contracted into one, the whole volume of blood being in the large vessels, the internal heat is inexpressible, and the tunica conjunctiva, the bowels, stomach, and brain are filled with congested blood. Whatever moisture was on the skin previously to the sudden check given to the perspirable fluid, remains there on a cold, flabby surface; the countenance, after a lapse of twenty minutes, is the most distressingly haggard conceivable; the eyes sink into their sockets, and a glutinous film veils their former lustre: it is the eye of death. The fingers and toes are shrunk, and the nails blue; they assume the appearance of frozen limbs, or the hands of a washerwoman. The struggling from the accession of cramps is almost irrestrainable, and the shrieks, from the unceasing agony, rend the air. The thirst, as I have before mentioned, exists to an indescribable extent; and the more liquid which is drunk the more exquisite becomes the desire. The respiratory apparatus is so morbidly increased, that the semblance is to that of a person struggling between time and eternity, as in the act of drowning. As sudden as the attack is, so is either recovery or dissolution. We may thank a gracious God, that while He permits so dreadful, so unexampled a visitation, it is not lingering, and moreover that it is quite under the influence of remedial measures; and above all, that while it still occasionally

* Vide page 94.

visits the human race, at every change of season or sudden change in the weather, it seldom indeed visits infancy.

When I say it appears with every change of weather, I do not desire to enter into the hidden mystery of cause. I have observed the disease vary, by perceptible degrees, with the changes of temperature; and as these changes took place, they seemed capable of operating powerfully upon man and beast: for it is a very remarkable fact, that in the grand army, a number of cattle died in the most sudden and unaccountable manner. Confirmatory of this deduction is the fact, that the indigent and naked part of the lower order of natives seemed to be principally affected by the epidemic influence. Those who were confined to particular parts of India, and had never travelled elsewhere, and learned how to evade the severities and vicissitudes of climate, escaped the accumulated sufferings and aggravated forms of the disease. Thus much can I express my belief as regards second causes.

But when we take another survey, and observe the ravages of this pestilence, and the peculiar local situations in India, where the land was fertile, and teemed with vegetation of rice to a noxious degree; in others, where the grass grew man's height; and in forests of timber and brushwood, where the rays of the sun seldom penetrated; where the waters of the sacred streams, the Ganges and the Hooghly, receded from the land, and left a muddy and putrid exhalation, nay, in the very spots where for years out of remembrance exhalations rose from marshy bogs acted upon by intense and suffocating heat, even in these very baneful districts, the disease was never known before; the villages which these deleterious lands contained have been entirely depopulated. The pestilence added to miasmata had a most terrible effect.

But if the history ended here, we might indeed assign these local effluvia as a cause; but the fairest portion of the Indian continent, where health was no illusion, where sickness was a stranger; where mountains rose covered with the forest verdure; where rain fell monthly in

refreshing showers; where there was no deluging of plains or noxious vapours to contaminate the air, no forest or grass jungle to impede its free circulation; where the heat was temperate, agreeable, and invigorating; where the land was fertilized, and the husbandman rewarded; where the luxuriance of nature exhibited a beauteous prospect from the adjacent height: it is too true, that in this happy country, the disease appeared, and it was nearly depopulated. We are, therefore, brought to conclude, that it is a scourge permitted by a just Providence:—but who has known his mysterious ways, or is permitted to know his counsel?

END OF PART II.

PART III.

ON THE CURE OF DISEASES IN INFANCY.

Section I.

Remedies.

I know no science so important as that of remedies, and yet it has been rarely made a subject of that deep study which its importance in respect to the removal of disease so imperiously demanded. Pharmacy, which is deemed the lowest grade of medical studies, is notwithstanding, the most important part of them, and consequently deserves paramount attention. The object of this section will be, therefore, to enable my readers, not only to know what medicine they administer, but for what they administer it. But let not those who have perused the preceding pages be surprised at my pausing first, to contemplate the mercies of God. After the painful record of disease which the Second Part of this work exhibits, how realizing are the truths of the Holy Scriptures, that pain and sickness are the penalty for the sin of our fallen race! But how great is the mercy of God in the remedial redemption! How fully it corroborates the doctrine, that although sin entered by one, and all have sinned; much more the grace of God, which came by the atonement of one, has abounded; so that all may be saved with eternal glory, from sickness, pain, travail, and sorrow. He must be an Atheist, indeed, who will not behold the great mercies of the Giver of every good and perfect gift, in the dispensation of his providence and grace to men. 1st. I have shown that disease is produced by accumulation in the stomach. God has given remedies which we call emetics. These produce vomiting, which removes the load. 2d. That it is produced by accumulation in the bowels. A

remedy is given in what we call purgatives. These also remove the load. 3d. It is produced by perspiration being checked. A remedy is provided by giving what are called sudorifics, which excite perspiration. 4th. That disease is produced by obstruction of the secretion of bile. We secure a remedy, by giving a medicine which removes the obstruction. 5th. That disease is produced by obstruction in the circulation of the blood. God has provided a remedy, by making the blood circulate through vessels which communicate with one another, so that opening one draws the blood from the whole; as by bleeding. 6th. It is produced by the foregoing affecting the nerves. He has provided a remedy, by giving us what are termed sedatives, narcotics, and antispasmodics. If the urine be stopped, we have diuretics, which induce it to flow: if superabundunt, we have medicine to stop it. If there be excess of purging, we possess astringents. Yet where is the man who discovered and gave these remedies to his fellow creatures? There is not one; for as instinct points out to animals those things which are poisonous, so that they avoid them, and directs them to medicinal food when they require it; so has intellect and reason, under the hand of God, directed us to the means of refuge from the pains and sufferings of our bodily infirmities. Let not my readers, therefore, neglect to give the praise and glory to our bounteous Benefactor and Redeemer.

SECTION II.

How Medicine operates.

The first point on which I must instruct my readers, is what chemists call by the term at the head of the following.

SECTION III.

Affinity.

All medicines, by a constituent power which they possess, more readily unite with some than with others. This is what I shall call affinity. There are other medicines which do not mix together, but shew a nature repulsive towards each other; this evinces that they have no affinity to each other. It is said that spirits and water readily mix with each other: the reason is, they have a mutual affinity; but oil will not mix with water, because there is no affinity between them. These are axioms in chemistry, and I shall adopt the term as best suited to my purpose to illustrate the operation of remedies. The knowledge of this affinity, it must be acknowledged, therefore, is important, in administering medicines. Suppose, as an instance, we were to give calomel and jalap; they would have a very good effect according to our present illustration of affinity, as they co-operate in producing the same effect; but, on the contrary, were we to put calomel with potash, although they are both purgatives as much as jalap and calomel are, yet one would destroy the effect of the other; and while the potash would probably act, the calomel would become quite inert. Further, if two medicines, which have an affinity to one another, are brought together, a compound will be formed, which partakes of some, but not of all the properties of both the components; for the two component parts lose some of those properties which they had, while separate, and acquire new properties when combined. Again, by the intervention of a third substance, we may unite two, which, previous to that intervention, bore no affinity to each other. For instance, oil, when placed in contact with water, will not mix with it, because there is no affinity between them; but if potash be added to water and oil, then they all combine together, and form a compound called soap. This compound is formed, because both the oil and water have an affinity to potash, and they both unite with it. The knowledge of this affinity is hereby shown to be particularly useful in medicine.

We will say, in illustration, we have a case of a sore throat, or a pain in the joints, and we require an embrocation for them: we have heard that oil, and a stimulant, such as spirit, mixed with oil, are an excellent remedy; we consequently require spirits of wine, two drachms; oil two drachms; and water, eight drachms; to make an embrocation; but what is the consequence, when we add them together? Why, the oil and spirits will not mix together, so that the embrocation is useless. What is to be done, then? Add something, to which both the spirits, oil, and water have affinity; this is potash, or what is called, in medicine, alkali: add therefore a due proportion of alkali, and all will mix together, and form a useful and valuable embrocation. Again, we have an acid, and also potash, both separate; the latter is purgative, but the former is not; we are very desirous of giving the latter, because it is a very valuable purgative; yet we cannot give it by itself, as it is too acrimonious; consequently we ascertain what medicine united with it will destroy this acrimony, without deteriorating the purgative quality: we know this can be done, from the fact, that acid has an affinity to potash and to water; we take, therefore, twenty grains of acid, and dissolve it in four drachms of water; in another glass we take two drachms of potash, dissolved in two ounces of water: when both are mixed, an effervescence and delightful draught, with neither the acrimonious taste of potash nor of the acid, but a mixture quite tasteless, is made. This is termed *neutralization*, that is, there is neither a predominance of acid nor potash. By this new combination we have a valuable medicine, which not only acts upon the bowels, but excites perspiration*, quenches thirst, and promotes a discharge of urine; whereas, had they been taken separately, they would, most probably, have done considerable injury. Besides this advantage of the knowledge of affinity in compounding medicine, it is of the utmost importance to know the operation of affinity in

* Here lies the secret of Seidlitz powders, which are composed of two drachms of tartarized soda, and two scruples of carbonate of soda, in the white paper. In the blue paper are thirty-five grains of tartaric acid.

the stomach. We will therefore first consider magnesia, a drug in itself as harmless as the earth; but having an affinity with acid, it produces the same effervescence, and forming a combination with acid in the stomach, it operates as a very active purgative, and carries away with it all the acid from the stomach and bowels; by this operation it becomes one of the most important, and I may say, to children, inestimable medicines in the whole catalogue of remedies.

I shall conclude this article on affinity, by showing the extraordinary effect of it in preparing calomel, a medicine which ranks the highest in the list of medicines. To establish by further illustration the utility of this knowledge, calomel is prepared from quicksilver, sulphuric acid, and table salt. This being burnt, rises in a vapour, and becomes corrosive sublimate, one of the most powerful poisons with which we are acquainted; yet these articles, when separate, are not poisonous*. Quicksilver is perfectly harmless, sulphuric acid is one of the most strengthening medicines we possess, and table salt is indispensable to promote digestion; yet by this simple process, they become an active poison. A proportion of this corrosive sublimate is added to more quicksilver, which being burnt, and sent off into vapour, (in chemistry termed *sublimating*, from *sublimo*, to raise,) two or three times, becomes calomel. Such is the effect of affinity.

I will mention another effect in the composition of metals in medicine, which will probably be of use, as it shows another way of making calomel, by which the whole process of affinity is described, and which more particularly illustrates the subject of this section. It is prepared from diluted nitrous acid and purified quicksilver. The acid is poured on the quicksilver in a glass vessel; it is then digested with a moderate heat for six hours, at which time the heat is increased; the mixture is then permitted to boil; it is next poured off. Thus we find that

* Let not my words be misunderstood here, nor the truism mentioned by Linnæus forgotten, that "*Medicines differ from poisons, not in their nature, but their dose.*"

the quicksilver has an affinity to acid, and unites with it. But the calomel at present is in solution; we therefore require something to remove the acid which holds the calomel, so that it may be separated. We take table salt and water, which being added to the former mixture, the salt unites instantly with the acid, and the mineral, that is to say, the calomel, sinks to the bottom in a white precipitate, which is effectually produced by adding a little solution of potash. Now the knowledge of this fact is valuable, because it shows, that potash unites with acid, and separates it from quicksilver, with which it may have been united, and teaches us, that corrosive sublimate is nothing more, as I have shown, than quicksilver united to muriatic acid, which acid is formed from the table salt. As soon as a person takes a dose of corrosive sublimate by mistake, by taking a dose of potash, the acid mixes with it, the quicksilver separates, and the corrosive sublimate is no longer poisonous. How many lives, therefore, may be saved by the simple knowledge of affinity, and how necessary is the knowledge of it in preparing medicine! What then does this information teach? The extreme folly of quack medicine, which not being combined according to the knowledge of affinity, has all kinds of repulsive operations. Let my readers figure to themselves an Asiatic prescription, which is compounded frequently of a *hundred* articles! This also was, in a great measure, the case with the ancients; but the improved knowledge of botany and chemistry shewed the fallacy of such mixtures, and now the scientific studies pursued by medical men, have made the course of their education, as well as their profession, delightful, recreative, and interesting, independently of the great service it has rendered to humanity. Let this section, therefore, determine my fair readers to put aside all specific remedies, and not to allow in themselves any degree of empiricism.

SECTION IV.

Counter Irritability.

To explain this, I must mention, that when nature is oppressed with disease from irritation of the teeth, she produces a counter-irritation on a spot where no injury can accrue; thus, when there is much irritation on the brain, she excites running sores on the head, and from the glands of the ear, eruptions on the skin, large boils, &c. This is a counter-irritation, tending to remove any serious injury from important internal organs to the surface of the body, such as inflammation of the brain to an eruption on the skin; and looseness, the effect of counter-irritation, is nature's remedy for inflammation and constipation of the bowels. When an infant arrives at the period of teething, it has what is called the red-gum, an eruption which appears on the surface of the body; and frequently, at the same time, there is a discharge from the glands behind the ears, and in the groin. During these excretions, the child, for the most part, is lively and well; but as the equilibrium of health, in such delicate subjects, is easily disturbed, its continuance is very precarious, and when disturbed, if some new evacuation be not substituted, disease unavoidably ensues. So exquisite is the sensibility of the nervous system in children, that a very slight degree of irritation will, in their tender bodies, excite convulsions. In such circumstances, the utility of remedies, which excite counter-irritability, is obvious. Dr. Willis relates the case of a girl, who was subject to epilepsy, and in one of her fits fell into a fire, and burnt her face and forehead in a most shocking manner. The accident, however, was attended with this good effect, that while the ulcers remained open she was free from the disorder. Hollerius furnishes us with a striking example. A girl had from her infancy a running sore in her head; it was suddenly healed, and she became epileptic; a variety of remedies were tried to no purpose. Duretus was consulted, who recommended the

application of beet leaves to the head, which brought on a large discharge, and removed her epilepsy. Hippocrates declares, that running sores of the head prevented convulsions. This point being established, we will commence our detail of remedies, by observing what remedies are counter-irritants:

I. *Ointment.* Take tartar emetic, two drachms; simple ointment, one drachm; mix them well together, and rub one drachm, night and morning, along the spine of the neck, and it will bring out an uncommon fine eruption.

II. *Blisters.* Apply these behind the head and ears, and they will produce a great discharge.

III. *Setons.* Pass a needle, made for that purpose, with tape attached to the end, through the skin, so as to leave the tape in the wound; move the tape backwards and forwards, night and morning, and a copious discharge will be produced.

IV. *Issues.* By cutting the skin and the flesh, and putting a pea inside, ulcer and discharge will be excited.

V. *Escharotics.* Take a piece of kid glove leather, spread sticking plaster on it; over this scrape some lunar caustic; apply this to the surface, and we shall produce an elevation and discharge to any extent desired.

SECTION V.

Depletories.

I shall consider the constitution to be in that state, which we call full of blood and full of humour; that is, one which people term the highest health, but which in medicine is too well known to be one of the utmost danger; because it is always predisposed to fever and inflammatory disease. Such a constitution, when disease exhibits itself, demands the most active and speedy evacuants.

I.—BLEEDING.

As my fair readers cannot use the lancet, they must have recourse to leeches*.

* Plate XI. exhibits the danger of bleeding by unskilful hands.

Explanation of Plate XII.

Fig. 1st. represents the danger of bleeding by persons who are not professional. A A A represent the veins whence the blood is ordinarily drawn. If artery B is wounded, the patient might bleed to death. But should such an accident occur, (viz. wounding the artery in the act of bleeding,) if the thumb is placed on A Fig. 11, which is the artery inside of the arm, the bleeding will be stopped until surgical aid can be obtained.

Blood-vessels of the Teeth.

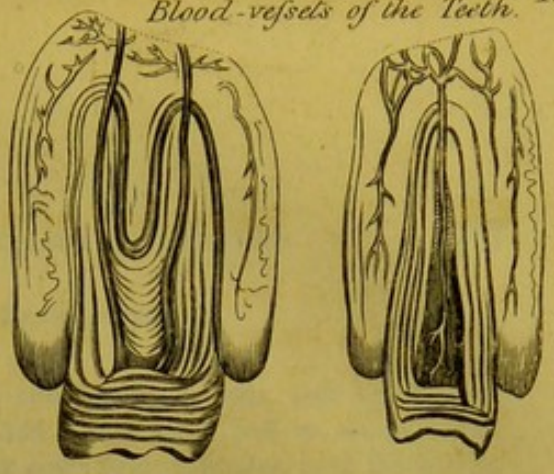


Fig. 1.

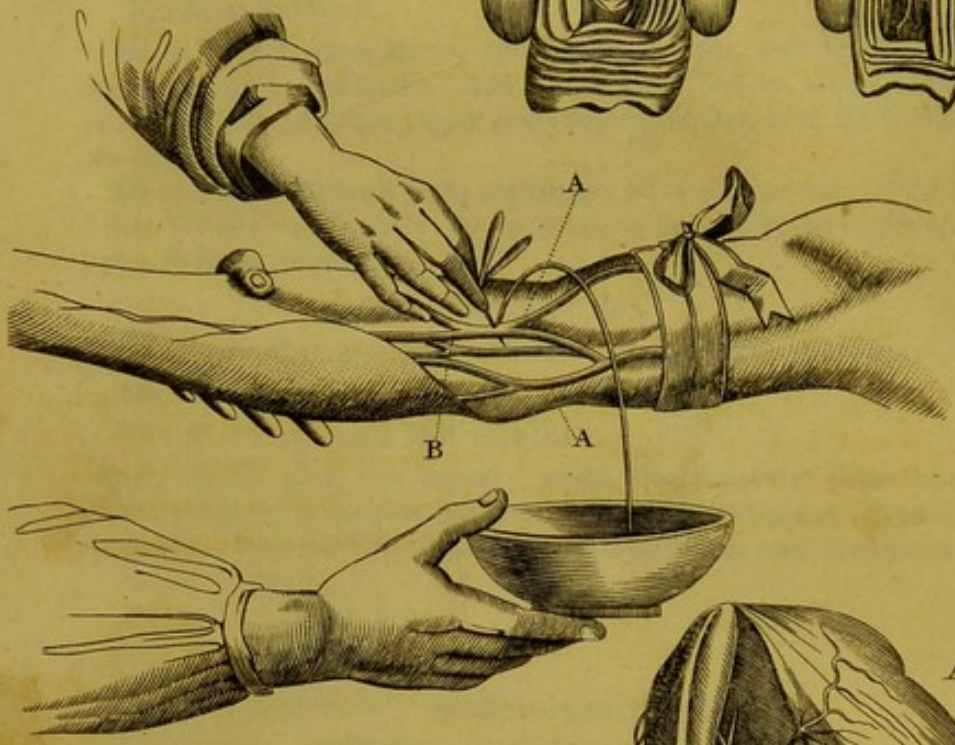
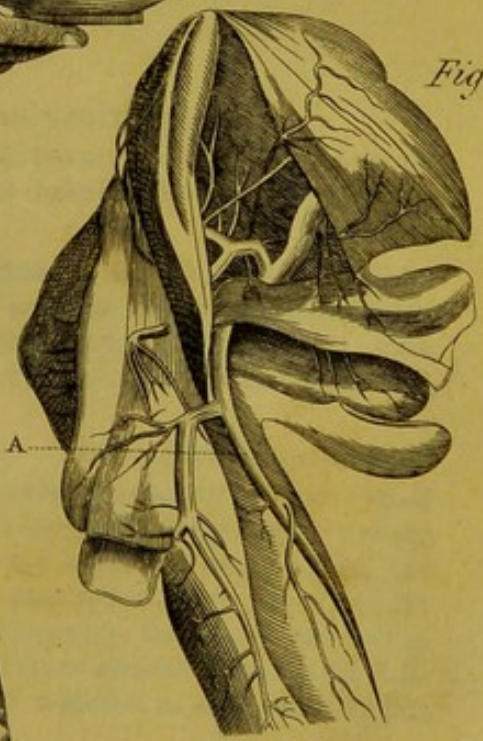
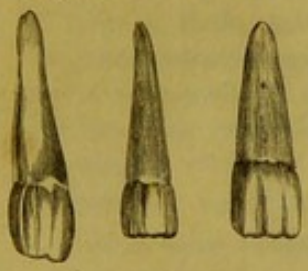


Fig. 2.



Single Tooth Incisors.



Double Teeth.

Lower Jaw.

II.—Injections.

Made as follows.

No. 1. Take of senna leaves, two drachms; water, half a pint; boil for ten minutes; and strain. Add Epsom salts, half an ounce; olive or castor oil, four drachms; inject every twelve minutes, until the bowels are affected.

No. 2. Take of common salt, one ounce; olive oil, one ounce; warm water, sixteen ounces; mix: seven ounces to be injected every ten minutes, until the bowels are affected.

III.—Purgatives.

These are the remedies which evacuate by the bowels:—

No. 1. Calomel.

No. 2. Senna and salt mixture.

Take Epsom salts, two ounces; senna, five drachms; water, one pound; boil fourteen minutes, and then strain; then add tincture of senna, one ounce. Take one table spoonful every three hours, until it operates.

No. 3. Jalap.

No. 4. Castor oil.

No. 5. Rhubarb.

No. 6. Magnesia. Magnesia mixture.

Take magnesia, two drachms; water, two ounces; mix, and give one tea spoonful every evening, taking care to shake it well before it is given.

No. 7. Chalk mixture.

Take of chalk, half an ounce; rhubarb, one drachm; sugar, three drachms; powdered gum arabic, half an ounce; water, eight ounces; the water to be gradually rubbed with the gum arabic till well mixed; then add the other ingredients. A dessert spoonful to be taken night and morning, or oftener, if necessary.

No. 8. Lenitive electuary. To be made as follows.

Take of senna leaves, in *very* fine powder, four ounces; pulp of French prunes, one pound; pulp of tamarinds, two ounces; sugar, half a pound; water, one pint; essential oil of carraway seeds, two drachms; boil the pulp with the sugar and water to the thickness of honey; then add the other ingredients, and mix them well together: the dose is from half to a tea spoonful, or more, if required. It is an admirable laxative for children of costive habits, and who refuse medicine, as they will take this as sweetmeat.

IV. Sudorifics.

There are others which affect by the skin; these are,—

No. 1. Calomel.

No. 2. Antimonial powder.

No. 3. Warm bath.

No. 4. Antimonial wine.

No. 5. Sweet spirits of nitre.

No. 6. Camphor emulsion. To be made as follows:

Take of camphor, one scruple; sweet almonds blanched, two drachms; refined sugar, one drachm; water, six ounces: first rub down the camphor with 20 drops of spirit of wine until it is very fine; then add, and triturate the almonds with the sugar, till very fine; lastly, gradually drop the water until it is all mixed.

No. 7. Solution of acetate of ammonia. To be made as follows:—

Carbonate of ammonia, one ounce; acetic acid, two pints; add the acid to the carbonate of ammonia, until the effervescence ceases.

No. 8. Fever mixture.

Take of solution of acetate of ammonia, four drachms; tincture of camphorated opium, four drachms; sugar, two drachms; water, six drachms; of which, one tea spoonful is to be given every two or three hours.

No. 9. Saline julap.

Take of lemon juice*, one ounce; salt of tartar, or carbonate of potash, two scruples; mix; and after the effervescence, add sugar, two drachms; oil of anise seed, four drops; water, two ounces: a spoonful to be occasionally given to quench thirst.

The other evacuants are by the stomach.

V. Emetics.

Antimonial wine. To be made as follows:

Take of tartar emetic, one scruple; boiling water, four ounces; Madeira wine, six ounces; dissolve the tartarized antimony in the boiling water, then add the wine.

VI. Diuretics.

Other evacuants are by the kidneys.

No. 1. Take of nitrate of potash, one drachm; refined sugar, half an ounce; vinegar of squills, half an ounce; sweet spirits of nitre, one drachm; water, three ounces; mix one spoonful twice or thrice a day.

No. 2. Carbonate of potash, five grains; lemon juice, one drachm; vinegar of squills, eight drops; tincture of opium, one drop; water, three drachms: to be given twice a day.

The next remedies of this kind are called

VII. Excretories,

Which discharge by the glands.

* As lemon juice cannot always be preserved in India, equivalent proportions of concrete citric acid will answer in lieu of lemon juice. The following are the proportions for the neutralization of alkalies:—Ten grains of citric acid are equal to three drachms of lemon juice, and will neutralize one scruple of carbonate of potash.

No. 1. Calomel, to excite salivation.

No. 2. Mercurial ointment.

VIII. EXPECTORANTS.

No. 1. Squills.

No. 2. Gum ammoniacum.

The following have an admirable effect in exciting the glands to expectorate phlegm in coughs.

Gum-ammoniac mixture. Take of gum-ammoniac, two drachms; water, one pint; rub down the ammoniac, and while rubbing, add the water by drops until it is all mixed.

Cough mixture. Paregoric elixir, four drachms; gum ammoniac mixture, four drachms; vinegar of squills, three drachms; water, six drachms; mix. A tea spoonful once or twice a day.

Such are the *depletories* or evacuants, by the blood vessels, the skin, the kidneys, the glands, the stomach, and the bowels.

SECTION VI.

Repletories.

These are astringents, tonics, antispasmodics, and narcotics.

SECTION VII.

Astringents.

In that state of the constitution, when from long continuance of sickness, it has been necessary to use a great quantity of mercurial and purgative medicine, and when disease has been removed, and there remain only debility and laxity or flabbiness of muscle, or according to medical phraseology, an *atony* in the system, (which signifies relaxation, with loss of muscular exertion,) it becomes necessary to restore the bowels to their original healthy state.

We shall first consider those astringents which are necessary to restrain the action of the bowels. Suppose the constitution to have gone through a course of copious purgative medicine, and that the disease terminates

in what is called, by the profession, diarrhœa, from the Greek word signifying *to flow through*, because whatever is taken into the stomach, almost immediately flows through the bowels, by which the body is deprived of all nourishment and sustenance. It is necessary, then, in this case, (being first convinced that the bowels have been freed from extraneous matter by purgatives,) to have recourse to such medicines as will astringe this great laxity in the muscular coats of the bowels.

ASTRINGENTS.

1st. Powder of chalk, with opium, in the following proportions :

Prepared chalk, two scruples ;
Opium, one grain.
This makes seven doses, of which one may be given every night.

No. 2. Rhubarb, twenty grains ;
Prepared chalk, one drachm ;
Dover's powder, ten grains ;
Water, three ounces ; mix carefully. Take from one dessert to two spoonfuls every six hours.

No. 3. Electuary of catechu, two drachms ;
Prepared chalk, half an ounce ;
Water, six ounces. Take from two tea to one table spoonful every three or four hours.

No. 4. The above mixture, three ounces ;
Tinct. of opium, fifteen drops.
The dose as in the preceding.

This has generally a very great effect in astringing the laxity of the bowels.

TONICS.

We must now consider those remedies which constringe the lax and flabby muscles, after a protracted and debilitating sickness :

No. 1. Carbonate of iron ;
No. 2. Powder of bark ;
No. 3. Sulphate of Quinine ;
No. 4. Vitriolic acid ;
No. 5. Colomba powder ;
No. 6. Angustura bark.

The manner in which I prescribe these remedies, is as follows.

No. 1. Take carbonate of iron, and give from five to ten grains in a little water three or four times a day.

No. 2. Take powder of bark, one ounce;
Vitriolic acid, one drachm;
Water, one pint; mix well together. Take one tea spoonful, six or seven times a day.

No. 3. Take Colomba powder, five grains; rhubarb, two grains; Cayenne pepper, a quarter of a grain; mix. Give one three times a day.

No. 4. Sulphate of Quinine, one grain three times a day.

Antispasmodics, or Narcotics.

These are medicines to remove pain or produce sleep, such as *sedatives;* from *sedo,* to ease, or assuage.

No. 1. Paregoric elixir, two drachms;
Water of acetate of ammonia, four drachms;
White sugar, four drachms;
Water, six drachms; mix. One tea spoonful to be given every two or three hours.

No. 2. Tincture of hyoscyamus, or henbane, from three to ten drops.

In the event of great irritability and spasm:

No. 3. Camphor, two grains; to be rubbed very fine, with ten drops of spirits of wine; then add tincture of opium, three drops; water, one dessert spoonful; mix; to be divided into two doses; and should the first dose fail to produce sleep, give the second.

As sedative.

No. 1. Infusion of digitalis, to be made as follows. Take of leaves of digitalis, half a drachm; boiling water, four ounces; macerate for four hours in a loosely covered vessel, and strain, and add spirits of cinnamon two drachms.

No. 2. Camphor mixture, two ounces; powder digitalis, fifteen grains; acetate of potash, fifteen grains; tincture of opium, one drop; infusion of digitalis, two ounces. One tea spoonful twice a day.

No. 3. Camphor mixture, to be mixed as follows:
Take of camphor, fifteen grains;
Rectified spirits of wine, twelve drops;
Water, half a pint;
First rub the camphor with the spirit, then gradually add the water.

In Convulsion.

No. 1. Take of spirit of turpentine, two drachms;
Castor oil, one drachm;
Water, half an ounce; mix. To be repeated twice a day, if necessary.

No. 2. Take of camphor, two drachms; mercurial ointment, one ounce; powder of opium, half a drachm; mix; rub in two drachms night and morning.

SECTION VIII.

*Sick Diet**.

1st. *Full diet.* Breakfast, barley meal of a thick consistence.
Dinner, mhoom d'hol and rice, with tender chicken soup.
Supper, barley meal.
Drink, toast and water, or barley water.

2d. *Middle diet.* Morning, barley beverage, boiled to the consistence of liquid jelly.
Dinner, chicken soup with well boiled rice mixed.
Supper, barley beverage as in the morning.
Drink, toast and water, or barley water.

3d. *Low diet.* Breakfast, barley beverage, rather thin.
Dinner, the same.
Supper, the same as the morning.
Drink, toast and water, or barley water.

SECTION IX.

Treatment of Fever.

(See Part II. Section III.)

Care must be taken that a warm skin is not mistaken for fever, which is ordinarily the case. Often have I been called to visit children supposed to be labouring under violent fever, when it was alone in the anxious mind of the mother, and the child found in fine health, and in its natural temperature. If the weather and the skin be both warm, of course the child will feel so; but if there be no expression of thirst, nor restlessness, it is not fever. Fever will be known by the skin being hot, and the infant becoming exceedingly restless, drooping the head upon the shoulders of the nurse, constant crying, desiring the breast, or drink, and the mouth will be hot and parched. Give, on the instant, four grains of calomel, with two of antimonial powder, and lance the gums well the whole length of both the upper and the under jaws. Should the symptoms increase, the face being much flushed three

* This diet is only applicable to children who are weaned.

hours after the first dose, the forehead feel very hot, the eyes be at all inflamed, and great heat prevail on the soles of the feet, and palms of the hand, put the child in a sitting posture up to the chin into a hot bath, as hot as bearable, for ten minutes; apply a blister to the nape of the neck, and two leeches on each side the neck near to the gullet.

Let the child's head be elevated in bed, and surround the head with a towel constantly wetted with vinegar and water. If the bowels are confined, injection No. 2. Section V. which is to be thrown up every ten minutes, until they are opened. Should the fever continue after a lapse of six hours from the attack, apply the ointment*, twenty minutes at a time, and give the mixture No. 2. of purgatives, Sec. V. every two hours, until it operates copiously. If there is still a continuance of fever eight hours from the attack, with restlessness, want of sleep, and no moisture on the skin, give the fever mixture No. 8. Sec. V.

It is probable the perspiration will now return, the child will sleep, and the fever be removed; so that nothing more will be requisite than to continue the fever mixture for a few days, giving five grains of calomel every night, or twice a day, should there be the least symptom of fever remaining. The bowels are to be kept well open with the senna and salt mixture, (No. 2. of Purgatives, Sec. V.) and the gums are to be lanced daily; the ointment by frictions to be continued, and the blister kept open with the savine ointment, which is to be spread on fine linen, until the teeth, which the child is cutting, are completely through.

Should the symptoms fail to remit, and the fever continue, then the dose of calomel must be repeated every three hours. The tartar emetic ointment (Section IV.) to be rubbed on and down by the spine for half an hour at a time to produce eruption. Let me digress to mention, that death generally takes place after twenty hours, if the most active measures are not put in force; and the object is to draw the affection, that is to say, irritation from the brain,

* Composed of camphor and mercurial ointment, Vide Section VII. rubbed upon the abdomen.

liver, and bowels, which being done, all goes on well. It is very rare, indeed, that these violent attacks of hot burning fever ensue, but most generally there will be a slight warm skin, with restlessness and thirst, proceeding from the irritation of the teeth, which merely requires the lancing of the gums, and occasional doses of four grains of calomel with two of antimonial powder, the bowels to be kept regular with the mixture No. 2. Purgatives, Section V. and in event of the skin being dry, and the child tormented with sleepless nights, the fever mixture, Section V. No. 8. is to be administered. The diet, at first, should be low, gradually increased to middle; and should excessive thirst be experienced, saline julap may be given, Section 5. No. 9. Slight fever ordinarily prevails when the child is cutting the first six teeth: when, however, the eye and the double teeth begin to penetrate the gums, a hot burning skin is often suddenly felt, and the fever proceeds as I have mentioned, until it terminates in convulsions.

SECTION X.

Treatment of Convulsions.

(Vide Part II. Section IV.)

I premise that the hot bath, mercurial frictions, Section VII. No. 2. injections, purgative mixture, as well as calomel powders, have been duly administered, that the disease is still triumphant, and the child sinking into convulsions.

We shall proceed to adopt a very valuable remedy, which is a late discovery in this complaint, and therefore not much known; but were I to mention the doses, without first describing its intrinsic qualities, I should so startle my readers that they would be afraid to adopt it.

The medicine to which I allude, is spirits of turpentine. In the first place, I must state a fact which I communicated to the medical world some years since, of a remarkable circumstance in the operation of medicines, that there are those which in a small dose are stimulant

and purgative, but in a large dose, are sedative, having the very opposite effect; for instance, calomel from one to ten grains is an active purgative, and excites sickness and lassitude; but in doses from twenty to thirty grains, it is a delightful sedative, restrains purging and vomiting, induces sleep, and assuages pain. Rhubarb, in small doses from four to five grains, acts as a purgative; but in thirty or forty grains, is often useless. Antimonial powder, in two or three grains, acts on the skin by exciting perspiration; but in doses of half a drachm, it has no sensible effect whatever. Saline salts, in small doses, excite a flow of urine; in large doses, they act on the bowels, and rather restrain the flow of urine. Laudanum, in small doses, stimulates; in large, it has quite the opposite effect. What is the more extraordinary still, is the effect of tartar emetic: it has been lately ascertained, that this medicine in large doses acts as a sedative, while in doses of four or five grains, it is the greatest stimulant of any emetic we know. This is the case with many other medicines, but especially with the one in question, namely, turpentine, which, for an infant, in a dose of ten or twelve drops, excites the urinary organs, so as to produce bloody urine; whereas, from two to three drachms, it has scarcely any perceptible effect on the urine, but produces wonderful effects upon the brain, stomach, and bowels. It is a remedy that has frequently removed convulsions, and instantly allayed spasm, when all others have failed. It has been an effectual remedy in curing water in the head, as well as epileptic fits*.

The effect of this medicine upon the brain is very extraordinary.

From a drowsy, comatose state, it seems to awaken the child instantly to a surprising hilarity, and in short, induces a new action throughout the system, stimulating the bowels, and bringing away, when all other medicine fails, the most offensive, feculent matter, and reproduces in them a healthy action; added to which, it excites a free perspiring skin; and so evidently does this medicine

* See Section XV. on cases of Hydrocephalus.

affect the whole system, that it is very perceptible in the discharges by stool, urine, and perspiration.

Having, therefore, fully developed the virtues of this delightful medicine, I trust my readers will not be under any alarm when they administer it.

It will have been observed, when fever has advanced so far as to produce convulsions, that the most active medicines have been used, and that the dejections still continue to be green, and in lumps of mucus; all medicines having failed, therefore, in their operation on the bowels to produce healthy dejections, the following draught must be given, and repeated daily if necessary.

Spirits of turpentine, two drachms;
Castor oil, two drachms;
Water, two drachms.

The above dose is for a child of seventeen months: if less than twelve months, half the dose will be sufficient.

But let us suppose that the accession of convulsions is sudden, without the previous notice of fever; and that none of the remedies mentioned for the treatment of fever has been adopted. The first thing to be done in this case, is to plunge the child into the hot bath, and to keep it there for twenty minutes up to the chin; the gums, on the instant, are to be well lanced; the turpentine draught administered; also two leeches on each side of the gullet; and if the bowels are not rapidly moved, an injection is to be administered every ten minutes, until a motion be effected; and the mercurial frictions are to be used the moment the child is taken out of the bath. Let it be understood as an invariable rule, that the frictions are to be used with gentleness, so as not to prevent the child's sleeping. In this state let mustard poultices be applied to the soles of the feet, to be made as follows;

Take of mustard seed and linseed, of each in powder half a pound; warm vinegar, as much as may be sufficient to make into a poultice.

So soon as the convulsions are removed, the blisters excited by the above may be encouraged for a few days; then apply a blister to the neck, whence a discharge is to be promoted, by the application of savine ointment, until the teeth are through.

We shall now hope, that under this active treatment, the convulsions are subdued; if so, the mixture No. 2. of Purgatives, Sec. V*. is to be given for two days, being premised with three grains of calomel twice a day.

Mr. North does not concur in the universal opinion, that convulsions result from the revulsion of cutaneous eruptions internally. I give his own remarks. I coincide with him, that there is no danger from revulsion, if any other discharge either from the bowels or one artificially is produced.

"The desiccation of cutaneous discharges of any kind is considered by various authorities to be a frequent cause of convulsions in children. Judging from my own observation, I should doubt whether convulsions were ever produced either by the natural or artificial disappearance of cutaneous discharges or eruptions, provided that a slight action was kept up for some time upon the bowels by the assistance of purgatives, and that their effect was not allowed suddenly to subside. I am aware that the united experience of almost every writer upon the diseases of infants is in opposition to the inference I should draw from what has fallen under my own eye. Popular prejudice is strongly also in favour of the generally adopted professional opinion, that it is hazardous to interfere with long-continued discharges from the surface of the body. It is observed in the *Dict. des Sciences Medicales*, Art. CONVULSIONS, that amongst the cutaneous affections, the repercussion of which may be productive of the most serious consequences to infants, measles is certainly to be enumerated. The author of the article states that he has seen many children attacked with fatal convulsions, in consequence of measles having been injudiciously treated. In the majority of cases, perhaps, medical assistance is not demanded for the treat-

* Let it be understood, that this mixture is to be given as early as the cessation of convulsive paroxysm will admit, as it is of great importance to clear out the bowels; for there too often lies the lurking cause of convulsion, either from superabundance of food, or some extraneous substance which children, from not being carefully watched, ordinarily take up from the grass. I remember a child in this state, from swallowing a piece of bamboo, which was passed off by the bowels, an inch in length. Another instance of a similar nature was brought to my knowledge only a few days ago.

ment of measles, notwithstanding the occasional severity of the disease. Inflammations of the lungs and bronchiæ are among the most common accidents which supervene to measles; but I have never known convulsions follow, however injudicious the treatment might have been.

"Nature appears frequently to labour under considerable difficulty in the production of various cutaneous affections; and previous to the occurrence of eruptive diseases, paroxysms of convulsions not unfrequently occur. In such cases, they are generally considered as a favourable omen. From my own experience, I should infer that this opinion is well founded, provided the eruption makes its appearance at the usual period from the commencement of the premonitory symptoms. Baumes, on the contrary, considers a convulsive paroxysm previous to an eruptive disease, as so bad an omen, that the death of the patient may be prognosticated from its occurrence. M. de la Roche, Menuret, and some other writers, are also of the same opinion. It is well observed by Cullen, that if the attacks of convulsions previous to the appearance of the eruptions are severe, and frequently repeated, the languor is considerable, and prompt assistance required. It not uncommonly happens, when a child has been exposed to small-pox, measles, scarlet fever, &c. that the most violent disturbance of the constitution arises at the period when the eruption ought to occur, and only a very slight appearance is observed upon the skin, which quickly vanishes. In such cases convulsions are common, and are frequently fatal."

SECTION XI.

Treatment of Purging.

(See Part II. Section V.)

When the purging is of a healthy colour, that is, either the colour of rhubarb, gold, or mahogany, and not watery, no medicine is necessary; it is merely a flow of bile into the bowels, which is very healthy. But if the evacuations are very green, and the child draws up its

little limbs towards its stomach, it is proof positive that there is considerable acid in the stomach. In this case, we must have recourse to those remedies which destroy acid. We may give half a tea spoonful of magnesia mixed in a little water every night, until the bowels become healthy; or otherwise administer the mixture No. 6, Sec. V. which I prefer, as the medicine is always ready, and the mother is not required to leave her other different duties, to prepare medicine. It must be remembered, however, on all occasions, that the first thing invariably to be done, is to lance the gums.

Supposing the foregoing to fail of changing the morbid nature of the dejections, and that these continue offensive and bad; in this case, most probably, there is sluggishness in the liver: we must therefore have recourse to five grains of calomel, to be worked off with castor oil, the dose to be from one to two table spoonfuls; but should castor oil fail to agree with the child, give powder No. 3. Sec. V. the dose of which is from ten to twenty grains, or administer mixture No. 2. of Purgatives, Sec. V. for two days, which will remove any extraneous matter which may be clinging to the bowels. If all the foregoing fail, we must have recourse to one grain of calomel every night, in three grains of powdered sugar candy, for eight nights, with the mixture No. 2, of Purgatives, Sec. V. every morning, until one or two copious evacuations are produced daily. If, after all the foregoing, the bowels still discharge this offensive, green, mucous matter, we must give the turpentine mixture No. 2, of medicine for convulsion, Sec. VII. every day, for three days, which no doubt will effect all we desire.

There are, however, such purgings, as when from great laxity the infant passes every thing the moment it is taken into the stomach. In this case we must have recourse to mixture No. 4, Section VII. of Astringents. Before giving this mixture, however, I must call the attention of my readers to the observations which are contained in Sec. VI. and VII. of Part III. which are to elucidate the time and the state of constitution when this medicine is to be

used. Should this bind the bowels too suddenly, we must then have recourse to mixture No. 2. Sec. VII. of Astringents. If they relax, after this mixture, to their loose state, then one of the powders, No. I. Sec. VII. of Astringents is to be given twice a day. The constitution about this time, will doubtless become much reduced, and the child will have lost all appetite; give the powder No. 1, of Corroborants, Sec. VII. five grains three times a day.

Having been thus minute in the treatment of purging, I shall now proceed to that of eruption.

Section XII.

Treatment of Eruption.

(See Part II. Section VI.)

The first thing to be done is to lance the gums. If the eruption be simply prickly heat, the more of it the better, as it portends generally that the child will escape fever; but if it appear in large angry boils, it is a proof, that the child's habits are predisposed to fever, or bowel complaints. We must, therefore, proceed forthwith to cleanse the system of all its lurking morbid humours. Our best method is, one or two grains of calomel, combined with three of sugar, and one of antimony powder, to be given every night, for three nights successively, and worked off with No. 2 of Purgatives, Section V. daily. The great advantage of combining calomel with sugar, is, that we can put it on a child's tongue, and it will swallow it as sugar, without being a bit the wiser for it. It must be remembered, that mineral medicine will not mix with water; it invariably sinks to the bottom of a glass, so that mothers have often thought they were giving calomel, instead of which, they have only been giving water. It is not to be wondered at, therefore, if many children have suffered seriously from what are generally called trivial mistakes; but they are such as must, to a certainty, lead the medical attendant into error in the treatment he is adopting, if mothers are not particular in respect to this rule.

Fig. 1.

Fig. 2.

When an eruption of large red blotches appears, increasing more particularly after the child has been nursed, and pervades the arms, legs, stomach, and particularly the cheeks, having a very scurvy appearance, it is of no consequence, but is a sign of very good, sound health, and does not require any interference of art*. The eruption, however, which breaks out in large scabby blotches on the head, inside and at the back of the ears, increasing to large clusters, which run into one another, discharging thick, glutinous, offensive, and frequently ichorous yellow matter†, and becoming so corrosive as to destroy the whole skin of the head, leaving a bare, sore surface, irritating the child both day and night, and preventing sleep; this species requires moderating. We must here give one grain of calomel, with the same of antimonial powder, in three of sugar, for two nights successively, with a sufficiency of mixture No. 2 of Purgatives, Sec. V. to effect two or three copious dejections daily, for four or five days. Having thus cleared the bowels, we must rub the tartar emetic ointment, Section IV. No. 1, on the back, between the shoulders; when an eruption is produced by this application, we may then apply a little of the ointment of nitrate of quicksilver, night and morning, over the part affected, washing the head previously with bason‡, and warm water. This will speedily remove the eruption; but should the child experience the very least fever, or otherwise appear unwell after the removal of the eruption, we must produce an artificial discharge along the course of the spine of the neck, by the application of a blister, which must be kept open by mixing a little of the blister with simple ointment, which will counteract any inconvenience or danger, and keep up that object which is the intention of nature. If, however, the discharge is not virulent, but clean, and the eruption on the head not productive of irritability, and if the child appear cheerful and in health§, it is to be encouraged, and simply to be washed with warm water three or four

* Plate III. Fig. 1. † Plate VI. Fig. 1.
‡ Bason is baked gram, powdered, and sifted through muslin.
§ Plate VI. Fig. 2.

times a day. Those eruptions which appear in several little pimples, like flea bites, and principally attack the body, arms, legs, and lastly, the face, are scarcely deserving of notice; but if they irritate the skin, by exciting itching*, a little opening medicine, mixture No. 7, Sec. V. will be necessary.

There is another eruption which breaks out in large, bold, red elevations, about the nose, ears, ends of the nails, and toes, attended with a running at the nose, and agglutinating the nostrils, so that they are often quite choked up, and which usually spreads to the eyelids, by which they are likewise united together†. This commences in large congregating pimples, which are exceedingly red and angry, exciting considerable irritation, very much like that from the prickly heat. This eruption, however, is of very little consequence, and merely requires our attention to be directed to the stomach. To premise, the mixture No. 21 of Purgatives, Sec. V. with half a teaspoonful of magnesia must be occasionally administered, and the bowels be regulated to a natural standard for a few days by the daily exhibition of the purgative mixture, which will indubitably answer all our expectations.

Section XIII.

Treatment of Water in the Head.

(See Section VII. Part III.)

On referring to the history of this alarming disease, it will be found that this complaint will require much study to have a right knowledge of the remedies, as well as of the mode of treatment. I have appended much collective intelligence and experience, in cases which fell under the medical care of some of the leading members of the profession in Europe, a mass of valuable matter,

* Plate III. Fig. 3.
† Plate III. Fig. 2.

which probably will not be found in any other work extant; and if my readers will peruse this and the two following sections with attention, I have no doubt of their becoming perfect masters of the subject. My readers will learn that this affection proceeds from obstruction, originating generally from sudden checks of perspiration; and were it necessary to strenghten this opinion, I could show the concurrent testimony of many ancient and modern physicians, that even cold and sudden checks produce apoplectic tendency,or, in other words, effusion, or according to the prevailing denomination, "water in the head." If, therefore, obstruction in the venous circulation, or sudden collapse, is present with effusion, it follows that the whole glandular system of secretion is affected, and the blood lays congested in the vessels of the bowels and head. What, in this case, is to be done? Remove the congestion by bleeding, which must be done forthwith, from places which are opposite to the obstruction, so that we may draw blood *from*, not *to*, the spot. It will be necessary to draw blood from the neck and the small of the back: two leeches on each side of the neck are to be applied, as well as on the small of the back. It will now be expedient to administer six grains of calomel, and after a lapse of twenty minutes give mixture No. 2. of Purgatives, Sec. V. together with three grains of calomel, with two of antimony powder, three times a day. The bowels are invariably to be attended to, by promoting liquid dejections. The mercurial ointment* may at the same time be rubbed twice a day on the bowels. A blister or a seton must be applied on the instant of the attack of the fever. The preceding treatment no doubt will at once remove the urgent symptoms; but should there be the least return, the bleeding is to be repeated. The recurrence may take place daily; the bleeding daily in this case will be likewise expedient. If there be torpor after the exhibition of the foregoing, administer the turpentine draught, Sec. VII. No. 1. Art. Convulsion, which may be repeated twice a day until the torpor is removed. The effect of the turpentine will be a profuse

* Sect. VII.

perspiration, and relaxation of the bowels. If an eruption have been suddenly repelled, let the tartar emetic ointment be rubbed along the spine, until an eruption is reproduced. Injections, Sec. V. No. 1. are to be administered invariably every ten minutes, if the bowels are difficult to move. The little patient is, also, on the attack, to be put into a tub of water as hot as bearable, as far as to the hips; besides which, if possible, the child is to be kept in a sitting posture, with wet towels of vinegar and water round the head. If, however, insensibility and torpor, or snorting in breathing, be great in this position, the head must recline on its ordinary elevation. Such is the treatment of a sudden attack.

If the bleeding* is so profuse, that the child becomes faint, throw a little table salt on the head of the leeches, and they will instantly drop off.

Let us now consider reaction to have taken place. To prevent a recurrence of the attack, apply a permanent counter-irritant, No. 5, Sec. IV. The success of this remedy will be explained in this section. We will now suppose that the disease is progressive, and not so sudden in its attack, or that the child has occasional convulsive startings, is habitually torpid, with eyes squinting; or without this latter symptom, feels lethargic and heavy, with an evident disposition to be lifting the hands to the head; the bowels being usually green, offensive, and unmoved without the aid of strong medicine; with other characteristic symptoms of predisposition to effusion, such as pain in the head, sickness, and redness of the eyes. As this disease makes rapid advances towards inflammation of the brain arising from the irritability of teething, our object is evidently to diminish frequency of pulse and irritability, to increase the action of absorption, discharge of urine, and to prevent spasm and inflammation. Very fortunately we are in possession of remedies, which have been separately used, and found successful. These are, digitalis† and squill, together with mercury.

* See Maxwell's case on the efficacy of bleeding.
† See Fisher's, Reeve's, and Shaw's cases, Part III. Section XV.

The first remedy was recommended, and found successful by Doctors Withering, Garnett, Doctor Dobson of Liverpool, and Doctor Percival: others ascertained the efficacy of mercury. The following is an extract from the late work of Doctor James Carmichael Smyth, who combined squill with mercury for the cure. " Doctor Whytt and Fothergill, the two physicians who first described the disease with tolerable accuracy, gave no encouragement to hope for success in curing it; both of them considering it as one of those complaints incurable by nature, and unfortunately out of the reach of art; nor did any one entertain a contrary opinion, until Dr. Dobson of Liverpool, in the beginning of the year 1775, led by a kind of analogical reasoning, employed mercury with a view of exciting a salivation, and by this means to cure the disease. Whether the reasoning was well or ill founded is immaterial, as the practice succeeded, and the patient recovered. Whoever reads the description of the cure, published by Dr. Dobson himself, in the year 1780, in Vol. VI. of the London Medical Observations, will have no doubt that his little patient laboured under a genuine Hydrocephalus. Since Dr. Dobson's publication, mercury has commonly been employed as the chief remedy for the cure of this disease; and though on some occasions with success*, yet such was the general failure, that many physicians of eminence, especially in the metropolis, became extremely sceptical respecting the related instances of success, not that they called in question the veracity of the relaters, but were very doubtful whether the instances of the disease, said to be cured by mercury, were in reality true cases of Hydrocephalus; and the uncertainty which was acknowledged to exist in distinguishing the disease, gave too much probability to such suspicions. In respect to myself, I am ready to confess, that having employed mercury on eight or ten different occasions, and though salivation had been sometimes excited, without one success-

* Read of the success of mercurial treatment, Part III Section XV. It is strange that to this day medical professors are sceptical as to the efficacy of medicine.

ful termination, my sentiments were much the same with the gentlemen above mentioned, until the fortunate issue of one case of Hydrocephalus, to which I was called, convinced me of the danger of forming hasty conclusions, as it carried the most complete conviction to my mind, that recovery from this formidable disease, however rare, was not impossible; and convinced me, that my previous unsuccessful endeavours, and those of others, were rather to be imputed to our not having seen, or from not having known the disease at an early period, than to any want of skill in the treatment, or of efficacy in the means employed. The mother of the patient to whose case I allude, was a widow left with four children, two of whom she had already lost by this disease, which was ascertained, after death, by the examination of the bodies. That they had the best medical assistance will not be doubted, when I mention the names of Drs. Warren and Turton, who attended them. The anxiety of a parent naturally led her to be extremely attentive to the symptoms of the disease; and from the loss of two children, she took alarm immediately, upon the slightest appearance of indisposition. She, therefore, upon the youngest remaining child being attacked by the disease, sent immediately to an apothecary of considerable reputation in the neighbourhood, who attended the child for three or four days before I was called in; and so rapid had been its progress, that even at this early period, the slow intermitting pulse mentioned by Dr. Whyte as the characteristic symptom of the second stage had already come on, which afforded me but small reason to expect that I should be more fortunate here than on former occasions: however I determined to make some alterations in my mode of treatment, and as the child, though long, it at last perfectly recovered, and has since been a mother herself; and as I imputed, whether justly or not, her recovery to the method of treatment which I adopted*, I shall give some account of it; and to do so, I am still further induced from having succeeded in another instance, where the child was under my own immediate care and direction; and in two others, where

* See Part III. Section VII.

the same method was pursued in consequence of my advice; besides two more which came under my care."

"Although I had hitherto been disappointed in the advantage I had promised myself from the use of mercury in the cure of the disease, and though discouraged with the difficulty I experienced in raising a salivation, and in regulating it when raised, I still entertained the highest opinion of the efficacy of the remedy: but thought it might prove more useful, if combined with other medicines, by which its effects might be determined to the kidneys, where its operation, at least, would be attended with no risk or inconvenience. And having, in other cases of encysted dropsy, particularly in hydrothorax*, observed the happiest effects from the combination of mercury with the fresh squill, I resolved to employ it so combined on this occasion.

"My form and manner of using it was the following. Ten grains of crude quicksilver was rubbed down with twenty or thirty grains of cordial confection, or manna, to which afterwards five grains of the fresh squill was added, and the whole made up with any syrup, to the consistence of a soft bolus or electuary, to be divided into such small parts or portions as was necessary for its being administered along with a little gruel, panada, or the like; and where it could not be conveniently administered in a solid form, I have given it as a mixture, suspending the mercury by means of some mucilage; but I prefer giving it in the first way, where it can be done. The dose above mentioned, that is, ten grains of mercury, with five grains of the fresh squill, was given every six or eight hours, where the child's stomach could bear it. The efficacy of this medicine I have occasionally endeavoured to promote, by giving other diuretics at the same time; but the stomach will seldom admit of this practice.

"Another part of the treatment in the Hydrocephalus, which I consider as of the first importance, is the application of caustic to the bregma†, or rather to what was

* Water in the chest.

† Bones on the side of the skull.

the bregma, the junction of the sagittal and lambdoidal sutures*. I prefer this part of the head to every other, from the frequent communications at this place between the internal and external blood vessels and nerves. The caustic has the advantage of a blister, being more certain in its effect, and more powerful in its operation. The first can only act on the living fibre, the second acts equally on the head. The first only raises the epidermis, or scarf skin; the other destroys the skin itself: the first is a trifling stimulus, and transitory in its operation; the other a powerful one, and whose effect is necessarily continued for a considerable time, during the sloughing off of the eschar; and by proper means a discharge and irritation may be kept up as long as required. The very powerful and beneficial effects arising from the application of caustics, has been very fully illustrated by the practice of the late eminent Mr. Pott, in scrophulous tumours of the spine, accompanied with palsy of the lower extremities, and in other similar complaints.

"The caustic I usually employed was the lunar caustic reduced to a powder, put on the surface of any adhesive plaster, spread on strong leather, of the size and shape of an elongated half-crown, more or less, according to the age of the child, and renewed every twelve hours, until it produces a sufficient eschar, destroying the skin of the part: a suppuration and separation of the eschar is afterwards promoted by the usual surgical dressings. The rest of the head, after being shaved, I ordered to be covered with a flannel cap, moistened from time to time with brandy, or any proof spirit. The first child, whose recovery I have mentioned, had a drain or issue kept on the head, for several months, owing to the apprehension the mother was under of the child suffering a relapse of the disease."

This counter-irritation by caustic, issues, and blisters, is universally acknowledged to be indispensable: the general modes recommended to prevent what may be termed inflammation, congestion, and effusion on the brain, however, are digitalis, in conjunction with squill and

* These sutures are towards the back and side of the head.

mercury, which are decidedly efficacious in the inflammatory stage; but turpentine is the only remedy, in my opinion, in the torpid, and ipecacuanha with opium in the irritable of an erysipelatous nature. Let us first contemplate the mode of operation peculiar to each of these medicines. We are sensible, from the history of this complaint, that the whole of the secretions are obstructed, and that in consequence all the glands are as it were enlarged, and unless speedily relieved become indurated; especially those which are called the mesenteric, from the Greek words signifying the middle intestine, that is, from their being situated in the middle of the bowels; and as I have shown that all the blood lies there, from the obstruction in the vena portarum, it is evident that they must become seriously affected: their use is for the most important offices, even that of being the conveyance of the chyle previous to its formation into blood; and it is not unusual that enlargement of these glands alone is a cause of a child's wasting away to a state similar to that of consumption; but the liver, (which is the largest gland in the body,) as well as the pancreas, partake greatly of this enlargement and induration, from the partial cessation of secretion in them respectively. Now the scanty secretion of bile, as well as of the urine, and discharges of perspiration, are removed the moment salivation ensues. The whole glandular system is excited to a renewed action, the flow of every secretion becoming free and abundant; the conjestive state, evidenced by lethargy, confined state of bowels, cold clammy skin, and slow, weak pulse, giving way to this delightful remedy. If the mercury does not take effect, and torpor, convulsive starting, and obstructed bowels intervene, then is the period to give the turpentine draught as before described, continuing the mercury, however, and not desisting until the system is put completely under its influence; and if all symptoms of alarm are removed, we are to give the following occasionally, for the purpose of keeping the bowels regular, and affording a tone to the stomach.

Take of gum arabic, two ounces; water, eight ounces; mix the water gradually with the gum arabic, than add Balsam of Copaiva, one

ounce; powder of sugarcandy, one ounce; mix: give one tea spoonful night and morning, or occasionally, with a view of keeping the bowels regular, urine free, and the skin moist, as well as to promote an appetite.

The diet ought to be at first, low, and gradually increased to the middle*.

But before we can describe the other remedies, we must proceed to treat of the inflammatory stage of this disease, which is attended with a rupture of a blood vessel, previous to entering still more fully into illustration by consulting cases of cures of Hydrocephalus.

SECTION XIV.

Apoplexy, or Inflammation of the Brain.

(See Part II. Sect. VIII.)

We have already shown how the acute form is to be treated, viz. that is, by bloodletting and purgatives; but where there is, besides inflammation of the brain, a tendency to apoplexy, evidenced by a fulness of the vessels of the head and neck, shortness of the neck, nausea of the stomach, constant full pulse, and disposition to a fulness of habit, it is then that the grand effects of digitalis, squill, mercury, and henbane will be observed. The effects of digitalis on the human body is very peculiar and wonderful, especially where there exist spasm, inflammatory tendency, dry skin, and constipated bowels. The peculiar power of this medicine is to lessen irritability of the system and frequency of pulse, increasing the action of the absorbents and promoting a discharge by urine. It is a medicine much employed, therefore, in inflammatory diseases, in active hemorrhages, in spasmodic affections, in insanity, effusion on the brain, and dropsical diseases.

The squill has also, in combination with the digitalis, a very delightful effect upon the kidneys, the stomach, and the bowels; and when both these medicines are combined with calomel, there is every human probability

* Part II. Sect. VIII.

that they will effectually prevent apoplectic or inflammatory disease of the brain. Should a child be thus seriously threatened, the following is the best mode of prescribing these medicines.

Powder of digitalis, six grains; powder of squills, two grains; calomel, eight grains; sugar, one drachm; mix, and divide into twelve powders: one is to be given twice a day.

If the child be very restless, the following may be added:

Take of tincture of henbane, two drachms; tincture of valerian, three drachms; water, two ounces; sugar, two drachms; mix, and give one tea spoonful every eight hours. The bowels must be kept open with mixture No. 2. Purgatives, Section V.

The effect of henbane is to produce sleep, without those unpleasant, wandering dreams, which opium is known to excite, and it does not occasion that constipation of the bowels which is likewise an effect of the latter; it has the extraordinary power of allaying inordinate action, and of mitigating spasm, and has proved highly efficacious in nervous, spasmodic, epileptic, and other affections of the spine and brain. It is an ancient remedy, and was used by Celsus and Diascorides, but gradually fell into disuse, until Dr. Stork of Vienna revived it, and now it is among the most popular remedies of the eminent of the profession. Valerian, likewise, is of great use in nervous disorders, as it tends to procure sleep, and in combination with henbane, as here prescribed, has a delightful effect. In the event of the bowels being lax from the action of the digitalis and squill, two drops of laudanum thrice a day may be given.

When convulsions ensue, we must bleed without delay, and until fainting ensues*, and which bleeding must be repeated according to the urgency of the symptoms. Liquid dejections should be promoted by the mixture No. 2. of Purgatives, or enemas, Section V. Part III. and the same plan pursued respecting nourishment as in the preceding disease.

I have thus described the treatment of the congestive and inflammatory stages. I shall now mention that which is noticed by Dr. Nicholl, and which he discriminates

* See Dr. Maxwell's cases, Section XV. Part III.

by the child being wakeful, restless, attentive to every sound, and to objects of sight, irritable in temper, the eye highly sensible to light, the pupil generally more or less contracted, the limbs much in action, the head suddenly moved about, or shaken from side to side, and a degree of animation and quickness of observation are present, much beyond what is commonly seen in children of the same age, so that although a diseased condition of the child's brain may be present, the infant may be considered as particularly healthy, on account of its being lively and sensible to the most trifling impressions. This is what Dr. Nicholl terms the simple form of sensitive affections of the brain; he recommends the following treatment.

"I know no remedy more appropriate to such a state of the cranial brain, as I have termed erethism, than the compound powder of ipecacuanha. This remedy may be advantageously combined with James's powder*, especially in that affection of the cerebral substance which may perhaps be expressed by the term *subacute inflammation*. Cold evaporating lotions should be constantly applied to the head; or cold water should be poured in a continued stream on the head: care should be taken to keep the head erect, and not to let it sink in a soft pillow. The child should be kept in a cool, quiet, darkened room, and every cause and source of irritation be cautiously avoided. The action of the kidneys should be promoted by small quantities of nitre, and of the acetate of potash†, in almond emulsion, to which a few drops of spirits of nitric ether may be added. The bowels may be kept open by means of mild glysters, and the child may be immersed in a tepid bath of moderate temperature.

"The primary cause of erethism of cranial brain in infants is so often seated in the gums, that we should never forget to examine the state of the mouth, and if the least fulness, or increase of redness, or of heat, be perceptible in any part of the gums, that part should be freely lanced.

* The beneficial effects of James's powder, will be observed in cases Part III. Section XV.

† The doses are described in the table of doses, at the end of Part III.

"In children of a full habit, if the symptoms of erethism of the cranial brain run high, leeches may be applied to the temples; but in that form of affection which I have endeavoured to describe under the term torpid erethism, where there is great general pallor and coldness, insensibility, and contracted pupil, the abstraction of blood will be a dangerous experiment, and may hurry our little patient out of the world. In such cases we must endeavour to combat the affection by the means already pointed out; and, in addition to these, the head may be blistered.

"In all cases of erethism of the cranial brain, we must ever be on the watch for the supervention of a plethoric state of the cerebral blood vessels, which combined with the erethismal state, constitutes inflammation. The means which have already been pointed out will, very probably, prevent the accession of this state of the cerebral blood vessels: should it, however, come on, leeches must be freely applied to the head, or blood must, in some other way, be taken from the head. The bowels must be purged by calomel and saline purgatives; after which, James's powder, combined with calomel and nitre, may be given in repeated doses, the child being kept during the whole time in a darkened, quiet room, free from all noise and disturbance. The head must be cooled by evaporating lotions, or by the application of snow or of ice, or in the absence of these, by wrapping towels dipped in cold water round the head. The quantity of blood to be abstracted, must depend upon the effect produced by the abstraction; as the object is the removal of the plethoric state of the cerebral blood vessels, if this object can be attained by the loss of a small quantity of blood, it will be wrong to take away a greater quantity.

"It may happen, where an inflammatory state of the cranial brain has existed, that the remedies made use of may have removed the plethoric state of the cerebral blood vessels, while an erethismal state of the cranial brain yet remains behind. In such a case, it will be proper to give the compound powder of ipecacuanha in liberal doses, combined with James's powder and nitre,

with small doses also of calomel, or of the mercury with chalk. For, if the erethismal state of the brain be not allayed, the child will continue restless, wakeful, and irritable, and we may expect that the plethoric state of the cerebral blood vessels will, sooner or later, return, and that, in this way, the child may, at length, be worn out. It will be proper to continue the use of the Dover's powder as long as the erethismal state continues; and if, after all appearances indicating the existence of such a state have vanished, the child is wakeful, or irritable, yet if an erethismal state have lately existed, we must procure rest and allay irritation by a continuance of the Dover's powder* in such quantities and at such times as may be requisite, recollecting that there still exists a tendency to the revival of an erethismal condition of the cerebral substance, which circumstances apparently trifling—such as loss of sleep, any error in diet, any undue condition of the alimentary canal, any irritation—may suddenly call into action." Such then is the use of Dover's powder, which we shall call powder of ipecacuanha with opium. This medicine is a compound of ipecacuanha with opium and sulphate of potash, and has, long since, been esteemed a valuable medicine, especially in dropsy and membranous pains, particularly at the joints; and I have no doubt will be found a most useful medicine in this complaint, principally on account of its effect as a sedative in this irritable stage. Two to five grains of this medicine may be given twice or thrice a day as occasion may require, paying particular regard to keeping the bowels regularly open.

SECTION XV.

Cases of Hydrocephalus and Erethism of the Brain.

I shall now proceed to illustrate the several remedies, by quoting cases, by which I trust my readers will be made

* It is strange that this physician has not specified the doses: my readers will find a table at the end of Part III.

complete masters both of the symptoms and treatment. I shall first instance cures by the effects of mercury.

A Case of Hydrocephalus, cured by Mercury. By Henry Fisher, M. D. Member of the Royal College of Surgeons of London, H. P. 6th (or Inniskilling) Dragoons, Navan, Ireland.—Edin. Med. Surg. Jour. 1825.

Andrew Casey, seven years of age.—For some days previous to an application for medical advice, this child was observed to be listless and languid, easily fatigued, with variable countenance, at one time much flushed, again pallid and shrunk; occasional thirst, with a morbid aridity of the skin; his bowels irregular. He abandoned his usual pleasures and amusements, and lolled in general on the lap of his mother. A physician having been called upon to see him, he prescribed some opening medicine, containing a portion of calomel, which for a short time seemed to have afforded him relief: however, his listlessness and inactivity, particularly towards evening, seemed rather to increase. He began to complain of a dull sensation of pain in the forehead, top and back of the head, thirst, and other febrile symptoms, which, notwithstanding the judicious administration of remedies, gained upon him daily. At this period, the 7th day of his illness, I was called upon to visit him, in conjunction with Doctor Munkitterick. We found him complaining, not violently, however, of his head, with rather a ferrety appearance of his eyes; his pulse 110, and firm; his tongue loaded with a yellowish white fur, particularly at its base, with a vivid redness of its point and sides, which latter also had a shining, scaly appearance; the bowels extremely irregular; the evacuations at one time of a greenish cast, at another, of slimy, flaky mucus, but so unnatural as to satisfy us of the extensive derangement of those organs, the healthy state of whose secretions is so essential to proper alimentary concoction. The bowels having been repeatedly evacuated by medicine previous to my visit, we were resolved to attend to the head, as claiming our principal care, which, having been shaved, and perpetual cold applications made use of, twenty

leeches were applied to the temples, with a perseverance in the purgative and antimonial diaphoretic* system already in use, together with the administration of the calomel in the proportion of two grains every third hour. Notwithstanding our having continued this evacuating and alterative course for three days, the pain scarcely ceased, or, if it did for a while, it was sure to return with increased violence. A blister was, on the 10th day, applied to the nape of the neck, with a repetition of the bleeding from the temples to the same extent as before; all which remedies, as yet, seemed to afford no relief whatsoever. The tumefaction of the epigastric† and hypochondriac regions‡ which had existed from the commencement of his illness, now rather increased, and much uneasiness was produced on pressure. We deemed it prudent to apply a dozen of leeches to that part of the right hypochondriacum§ most pained by pressing upon it. At this period, the 12th day, he became comatose‖, with the eyelids half closed; the pupils, particularly the right one, nearly insensible to light, only occasionally exhibiting some very slight contractile power; an evident paralytic affection of the left arm, thigh, and leg, and a difficulty of swallowing from want of sensibility, so great as to render it nearly impossible to get down his medicine. As our only hope, under these alarming and distressing circumstances, was the steady perseverance in, and full effect of, the alterative course, in addition to the calomel, we directed friction of the mercurial ointment to the extent of half a drachm night and morning, over the hypochondriac regions; and the first or inflammatory stage of the disorder having subsided, we deemed the application of a cap blister to the head, and sinapisms¶ to the feet advisable. This comatose state now much increased, in which he remained, with very little variation, till the 25th day, a period of 13 days, during which time the urine and fœces were passed involuntarily, his pulse ranging from 60 to 66 strokes in a minute, his right

* Exciting perspiration.
† The region of the stomach.
‡ The sides.
§ Right side.
‖ Morbidly disposed to sleep.
¶ Mustard poultice.

hand (the left being in a state of paralysis*,) constantly on the side of his head, with every symptom of a brain compressed by serum†. Notwithstanding those very alarming and dispiriting symptoms, we had not relaxed in our efforts, though apparently without a shadow of a hope of success, till the 13th day of the comatose state, and 25th of his illness; until which day, though we examined at every visit, we could not ascertain that the mercury had affected the mouth. However, we then discovered some slight mercurial ulcerations; the pulse was found to have risen 20 beats in a minute, and the pupils of the eyes, which were almost insensible to light‡, now began visibly to contract on the approach of a candle; his stools became tinged with a bile of yellowish hue, and in a great degree to have lost their well-marked hydrocephalic or spinachy appearance; the coma seemed by degrees to lessen. The alteration really appeared miraculous. From this period his recovery became incredibly rapid; the eyes resumed their sensibility to the rays of light, but the right one was observed to have acquired a degree of squint; the pain and uneasiness of the head had altogether ceased; the stools became consistent, and coloured with healthy bile. It is to be observed, that he became greatly irritable, amounting to violence bordering on insanity, which continuing for a few days, gradually subsided; the squint also became less, and in the course of a month, was scarcely perceptible. Since his recovery from this attack, now nearly two years, he has enjoyed uninterrupted good health.

"I considered myself fortunate in having in attendance with me a physician whose view of the case so entirely corresponded with my own, as the case required the most steady perseverance in the alterative plan, on which its success, though so long doubtful, absolutely depended."

* Loss of the power of voluntary motion.

† A kind of thin fluid, greenish and yellowish, seen on the surface of the blood, after it has been permitted to settle after bleeding.

‡ This is the only state of the pupil which is truly symptomatic, according to my experience.—*Author.*

Mr. Reeve, on a successful Case of Hydrocephalus, cured by mercurial Ointment and Counter-irritability.—Physical and Medical Journal, Vol. III.

The subject of this history, at the age of eight months, in the beginning of December, could stand alone, and had every appearance of a healthy, forward child. His temper was unusually placid, and his spirits invariably good. Towards the end of the month, he became extremely costive, and though medicine for a time relieved him, he was frequently and violently seized with pain in the abdomen, which was generally mitigated by a clyster. He had at times a great heat, and apparent uneasiness in the posterior of his head, and seemed unable to support it; was extremely restless at night, and watchful to an extraordinary degree, all which was supposed to arise principally from the teeth. From this time he ceased to grow, except the head, which towards the end of January, was perceptibly increased in size, and his costiveness was become so obstinate as scarcely to yield to the most active purgatives. It was this singular state of the alimentary canal, which had existed upwards of six weeks, that first led me to suspect some material derangement in the state of the brain. On the 12th of February, he was convulsed in the night, and there was such an accession of fever, that it was thought advisable to give small doses of tartar emetic till it should have sufficiently cleansed the bowels; but it produced little or no effect. The following day he took castor oil, which was repeated a second time before any motion was procured; the bowels were very hard, and of an extraordinary size; his stools were of clay colour, and of such an adhesive nature that they could not easily be separated from his napkins; his urine was frequently high coloured, secreted in large quantities, and gave a yellow tinge to his linen. On the 16th he was put into a warm bath, afterwards wrapped in flannel and put to bed; a dose of James's powder was given him, which occasioned several motions of the above description. He cried incessantly towards evening, shrieked in the most distressing manner, and appeared delirious. His fever now ran very high, pulse frequent, 130 to 140 in a minute; incessant thirst; and he had such

a voracious appetite, that he would take with indifference either medicine or food. The next day the warm bath was repeated, and some neutral salts and absorbent medicines were given, but apparently with no advantage, the fever still continuing with unabated fury till the 19th, when a mitigation of his sufferings took place, and for a few hours he appeared perfectly easy; but at four o'clock the following morning the fever returned, pulse 130, in which state he continued for several days, and during that time never closed his eyes. In the evening of the 21st he was evidently delirious, his eyes had a most dazzling brightness, and were continually rolling; his cheeks redder than scarlet. On the 22d the fever abated a little, but no sleep. On the 23d a drowsiness came on, which continued uninterruptedly till the 28th; he moaned incessantly, tossed his head from side to side, frequently put his hand up to it, ate voraciously, but took no notice of any thing. The nature of the complaint was now decided; the increased size of the head was very apparent, and the veins running up the left parietal* bone extremely varicose†. On the 29th his drowsiness abated, and he appeared less oppressed. March the 2d, a blister was applied to the anterior fontanelle‡, and it was determined to give a grain of calomel twice or three times a day, as the stomach and bowels were able to bear it, but it was soon observed to occasion too much pain and irritation to be continued: it was therefore given up for the mercurial ointment, of which half a drachm was rubbed in every night. During this time till the 16th, no material change took place; but his oppression was now increased, and the fever greatly aggravated; he looked death-like pale, moaned much, tossed his head incessantly from side to side, put up his hands to it, coughed violently, vomited a little, and had slight convulsions in the eye-lids and muscles of the mouth. All hope at this time of his recovery was lost; he cried a great deal, had much pain in his bow-

* Two bones on each side of the skull, from the Greek word *paries*, a wall, because they defend the brain like two walls.

† Distended vein.

‡ An aperture to be observed in the fore part of the head of children, when first born.

els, which were distended by flatus to an alarming degree, and the only relief that could be obtained was by clysters. He continued in this deplorable state till the 26th, with so little variation that it would be tedious to give the occurrences of each day. The mercurial friction during this period was omitted for a few nights, owing to the excessive irritation he was in; and neutral salts, carminative, and absorbent medicines were given, in order to palliate the most distressing and prevalent symptoms. The blister was still kept open, which discharged copiously at the fontanelle. On the 26th, he began to revive again, and to appear easy and take notice. At this time a profuse perspiration came on, particularly about the head, which was encouraged by enveloping it in warm flannel. The mercurial frictions were again had recourse to, and the quantity increased to two scruples every night, for the admission of which into the system, the most scrupulous exactness and attention was observed: for several days he continued nearly in the same state. On the 2d of April, his bowels were in excruciating pain, and much distended with flatulency, though every thing that could be suggested, had been done to counteract that tendency. His diet consisted of the nutritious broths, with little or no farinaceous matter; his strength was supported (when a cessation of feverish symptoms justified the exhibition) by a cold infusion of bark and Madeira. He screamed for hours incessantly, and very frequently alarmed those around him, who expected death every hour as a welcome visitor; but on the 3d, the alarming symptoms were considerably abated, and he went on from this time getting progressively better, till the 1st of May. Great hopes began now to be entertained of his recovery; but on that day he shewed great uneasiness—the fever returned—his nights were restless, and though opiates were given, little or no sleep could be procured. On the 5th, he was taken sick in the night, had violent pain in his bowels, and was very feverish all day. On the 8th, the fever again abated, and he remained without any material change for many days. It was now judged advisable to discontinue the mercury, which was accordingly done, and the blister

healed on the head, but a small one was opened behind the ear. I cannot date the commencement of his recovery till the period of dentition, which took place on the 4th of June, when an incision of the upper jaw made its papearance*. From this to the 11th, he continued easy and cheerful; but now his fever returned—he had restless nights—cried suddenly and violently: these symptoms, however, abated gradually, and on the 26th, he was taken into the air, enjoyed it much, and seemed to mend perceptibly. Colliquative† perspiration continued for some time, but at length gradually abated, and he began bathing early in September. His head is restored to its natural size, and there is no vestige of disease remaining in that part, except a small elastic projection at the anterior fontanelle, which is more open than it ought to be with a child at his age. I ought to have mentioned, that previous to his illness, a slight curvature of the spine‡ was observed, which has increased considerably with his weakness, and renders him at this time unable to sit up; but as I conceive this to be a consequence of an affection of the brain, it will be entirely got the better of as he acquires strength. The lower extremities were also much affected in this disease. He usually lies on his back upon the carpet, and is now able to turn himself from side to side with great activity, and is uniformly cheerful and comfortable. His bowels are quite restored, and he has left off all medicines. The mercurial friction was continued 35 nights, during which time, two ounces, three drachms, and one scruple of the mercurial ointment were rubbed in. It will scarcely be credited, but I appeal for the truth of the assertion to the testimony of Mr. Slater, a surgeon of eminence at Margate,—a gentleman

* This is strong evidence how the irritability was occasioned by the cutting of the teeth, as recovery was dated from their first appearance.

† From *colliqueo*, to melt or waste away, applied to inordinate secretions which are the effect of mere debility. Thus a purging, which mostly takes place in consumption, consuming the strength very rapidly, and generally alternating with profuse perspirations, is termed Colliquative.

‡ I am sorry to interrupt my readers in this interesting case: but it is important that I should draw their attention to pages 118 and 119 of this work.—*Author.*

as much distinguished for his humanity, as for his abilities in his profession, under whose particular care this very singular case occurred. And here let me pay that tribute of gratitude to which he is entitled, for his unremitting zeal and constant attendance for upwards of six months in the above very distressing disease; to whose exertions, candour obliges me to acknowledge, I attribute entirely the happy result of the case. The blister was kept open eleven weeks. I have not been particular in mentioning the different medicines prescribed for the various symptoms which occurred from the moment of his first attack; as I conceive they had no tendency, till the mercurial plan was adopted, to occasion re-absorption of the water in the head. His mouth was never much affected by the mercury, though sometimes he appeared to have a difficulty in swallowing. In this case, it was remarkable, that not the smallest dilatation of the pupils of the eyes was observed, through the whole progress of the disease, though he often betrayed much sensibility and uneasiness, on being suddenly exposed to the light*.

Mr. Whyte on Hydrocephalus. Medical and Physical Journal, Vol. II. On the Effects of Digitalis, Bleeding, Counter-irritability, and Purging.

The first of the cases alluded to, occurred between four and five years ago. The subject of it was a boy seven years of age, and of a muscular, sanguine temperament. His mother informed me, that for a month previous to applying for advice, he had, at intervals, complained of a pain in his head, attended with loss of appetite and strength; sometimes he vomited, once or twice a day; at other times once in two or three days; he had also fallen down on the floor several times in fits; he had been thirsty and feverish. When I first saw him, he lay in a state of total insensibility, which had been preceded by a violent, acute pain in his head. On examination, the pupils of his eyes were found much dilated, and did not apparently possess the smallest degree of irritability†. His face was flushed,

* Let this fact be kept in remembrance.—*Author.*

† How diametrically opposite to the state of the pupils in the preceding case!—*Author.*

Progress of the Pustules of the Cow Pox

his urine discharged involuntarily, and his bowels were costive; he made a constant noise, and his lips were in perpetual convulsive motion. I immediately opened the temporal artery, ordered his head to be shaved, bathed with vinegar, a blister to be there applied, and another betwixt his shoulders. He took small doses of calomel, combined with digitalis, and occasionally a draught composed of tincture of opium, ether, and camphor mixture. As purgatives produced no effect in stimulating the intestines, clysters were resorted to for that purpose. After remaining in the state above described about a fortnight, evident symptoms of amendment took place, and he soon recovered his usual strength.

CASE II.

August 19.—William Sedman, aged nine, of a dark complexion and spare habit, was seized, three days ago, with a violent pain in his head, attended with vomiting. The latter has ceased, but the former has continued so acute as to make him frequently scream out; at other times he lies in a comatose state; has had several convulsive fits. He takes no food, except when a little liquid is forced into his mouth with a tea-spoon. His pulse is quick and small; skin temperate, tongue tolerably clean. When sensible, complained of thirst; bowels costive; urine discharged involuntarily and copiously. For a fortnight previous to this attack, his father noticed his being hot at night. On the first day of his illness, an emetic was given, which brought off a great quantity of bile from his stomach. The following medicines were prescribed.

No. 1. Take calomel, three grains; to be taken immediately.

Take Epsom salts, two drachms; water, four drachms; oil of peppermint, four drops; mix; give a table spoonful every four hours; apply a blister between the shoulders.

No. 2. Apply six leeches to the temples.

Repeat the calomel.

Take powder Digitalis, quarter of a grain;

Make into a pill, which is to be given night and morning.

No. 3. Take acetated kali, one drachm;

Water, four ounces;

Oil of peppermint, four drops;
One table spoonful is to be taken every four hours.
No. 4. Take water, six drachms;
Oil of peppermint, two drops;
Camphor mixture, two drachms;
Tincture of opium, eight drops;
Spirit of ether, twenty drops; mix.
No. 5. Apply to the temples, three leeches.
Repeat the pill with Digitalis, and the mixture.
No. 6. Repeat medicines.
No. 7. As before.

This case, I think, clearly demonstrates the great utility of evacuation principally; and, if this proposition be granted, it will naturally follow, that where evacuation is proper, stimulants must be the reverse. It is true, some medicines of alleged stimulant power were exhibited; but that was chiefly with a view to palliate certain symptoms, and then not till after evacuants had been employed.

REMARKS BY MR. WHYTE.

In this disease, we have not only to lament the frequent insidious and equivocal nature of its symptoms, but also the opposite opinions that are still entertained by medical writers respecting its nature or proximate cause, which must prove an additional embarrassment to the young practitioner.

Dr. Whyte, to whom we are greatly indebted for a very minute description of the symptoms usually attendant on the disease, observes, "The immediate cause of every kind of dropsy is the same, viz. such a state of the parts as makes the exhalent arteries throw out a greater quantity of fluids than the absorbents can take up:" which state, from what he afterwards mentions, he evidently considered as consisting in debility.

Dr. Darwin thinks inactivity, or torpor of the absorbent vessels of the brain, is the cause of hydrocephalus internus*; yet, in another part of his work, he acknowledges that the torpor of the absorbent vessels may frequently exist as a secondary effect.

* Water on the brain.

Mr. Brown says, "that hydrocephalus internus is evidently a disease of debility, and requires remedies which increase the excitability of the system."

There are likewise others who view the subject in a very different light, and I think more properly. Dr. Withering observes, that in very many cases, if not in all, congestion or slight inflammation are the precursors to the aqueous accumulation.

Dr. Rush is of opinion, that instead of being considered as an idiopathic* dropsy, it should be considered only as an effect of a primary inflammation, or congestion of blood in the brain. "It appears, (says he,) that the disease, in its first stage, is the effect of causes which produce a less degree of that inflammation which constitutes phrenitis†, and that its second stage is a less degree of that effusion which produces serous apoplexy in adults. The former partakes of the nature of the chronic‡ inflammation of Dr. Cullen, and the asthenic§ inflammation of Dr. Brown." I have taken the liberty (he farther adds) to call it phrenicula‖, from its being a diminutive species or state of phrenitis. Dr. Beddoes says, he believes it to belong to inflammation, and that, at an early period of disease, he should be tempted to bleed as largely as in pneumonia¶.

This difference of opinions may, in some degree, be accounted for, if we advert to the division of the disease into the acute and chronic species. In the former, the disease generally proves fatal in less than a month; and it is seldom that more than two or three ounces of blood are found within the ventricles. In the latter species, the patient survives for many months, sometimes for a year or two; and the bones of the cranium are separated from each other to a great distance. From a variety of other cases of hydrocephalus internus, as well as the pre-

* A primary disease, which neither depends on, nor proceeds from another.

† Inflammation of the brain.

‡ Lingering.

§ From the Greek, signifying privation of strength.

‖ Mild inflammation of the brain.

¶ Inflammation of the lungs.

ceding, which have fallen under my own observation, I am led to think, that the disease very rarely occurs from mere debility, as a primary cause; but that debility is an effect induced by a previous excess of action in the arterial system.

The great analogy subsisting between the symptoms which are characteristic of inflammation, and those which form the first stage of the acute species of hydrocephalus internus, together with the good effects often consequent on blood-letting, and the inflammatory appearance which the blood frequently exhibits, are, I think, strong proofs of the disease being an active inflammation. It is very obvious, that the first stage of hydrocephalus internus is attended with an augmentation of the sensibility of the brain, from the violent acute pain of that organ; the painful sensation experienced, on the eyes being exposed to the stimulus of light; and the similar painful effect produced by noise on the organ of hearing; which phenomena are considered by nosological* writers, as pathognomonic† symptoms of inflammation. Dr. Darwin says, that when the eye is inflamed, light becomes eminently painful, owing to the increased irritative motions of the retina‡, and the consequent increased sensation. Dr. Rush also observes, that he has remarked an uncommon acuteness in hearing attend two cases of this disorder: in one of them, the sparks which were discharged from an hiccory fire, produced great pain and startings, which threatened convulsions.

The termination of inflammation by effusion into the other cavities, is an additional proof of the preceding suggestions respecting the nature of the disease, as there are instances of pneumonic inflammation terminating in hydrothorax§.

The description which has been given by Dr. Geapengiesier of the hydrops plethoricus¶, still further confirms

* The arrangement of diseases in classes, genera, species, &c.

† Peculiar to, or characteristic of the disease, from the Greek, "a disease," and "to know."

‡ An expansion of the optic nerve. See Plate X. Fig. 2. Letter B represents the optic nerve.

§ Water in the chest.

¶ Inflammatory dropsy.

what I have stated, relative to the nature of hydrocephalus. He observes, in the dissection of those dying of this disease, (hydrops plethoricus) collections of water have been found over the whole body, but particularly in the cavities of the thorax* and cranium, the large vessels have been found turgid, being distended with much blood. When the disease has been of the acute kind, no inconsiderable inflammations have been observed. For a more particular account of this species of dropsy, I would refer to the fourth volume of the Medical and Chirurgical Review.

With regard to the curative indications of this disease, the necessity of blood-letting cannot, I think, be too forcibly impressed upon the minds of young practitioners: and it ought to be carried to such an extent, as to answer a determinate end, viz. that of lessening topical congestion, and diminishing arterial action. Although the primary stage is the only period in which we can reasonably hope to derive any advantage from this remedy, yet, even when the symptoms which characterize the second stage have commenced, I would at least advise a topical bleeding, as there is reason to apprehend, that the same effect is sometimes produced from mere distension of the vessels, as when effusion has taken place. The sudden relief sometimes obtained by bleeding, I think, favours this idea. In short, I consider what Dr. Beddoes has said respecting venesection†, to be of more practical utility than all that has hitherto been written on the subject. Purging is also necessary, not only on account of lessening determination to the head, but particularly as the symptoms, which proceed merely from foulness in the stomach and bowels, resemble those of hydrocephalus, and have been frequently soon removed by evacuating the bowels;— cases of this kind are recorded by Dr. Armstrong and Dr. Underwood.

Blisters appear also proper; and Dr. Rush observes, that they should be omitted in no stage of the disorder; for even in the inflammatory stage, the discharge they occasion from the vessels of the head, greatly overba-

* Chest.

† Bleeding.

lances their stimulating effects upon the whole system. Lately, it has been recommended, to apply them in the course of the sutures*, and to keep up a discharge by means of an issue; but as the ceratum sabinæ† is capable of exciting a proper discharging surface, it appears preferable, its application being much less troublesome than that of an issue.

I have frequently given the digitalis; and I think with Dr. Farrier, that it appears adapted to some indication in every species, and every stage of the disorder; as promoting absorption, lessening irritation, and diminishing fever.

With regard to stimulants, in the first stage of this disease, when there is evidently increase of action with local congestion, they must obviously do harm; for in that case, as Dr. Darwin judiciously observes, they increase the action of the secerning, more than of the absorbent system; but, after copious evacuations, the resistance to the progress of the absorbed fluids is removed, and stimulants then applied, increase the action of the absorbent system more than that of the secerning one.

This observation is exemplified in scrophulous ophthalmia, where we find the complaint frequently increased by the application of stimulants, if used previous to the removal of the local plethora, by topical bleeding.

Much has been said in favour of mercury in this disease; but I must confess, that I never saw any good effects resulting from its exhibition, uncombined with digitalis.

Cases of Hydrocephalus, illustrating the Efficacy of Mercury. By Mr. Shaw.

Timmin's son, ætat. six, of an healthful and sanguine temperament, had for some time past been observed by his parents to have had worms, from the voraciousness of his appetite, and the unusual size of his belly, as likewise from his having voided several at different times; but as his health, in other respects, was not affected, they did not think it necessary to apply for any advice.

March 1.—For a week past, he has complained of a cold shivering, heat, &c. which continues with other

* Where the bones of the skull join into one another.
† Sabine ointment.

symptoms of pyrexia* ; he had a saline mixture with an antimonial powder, which operated as an emetic, and brought off a large quantity of bile from his stomach, with evident relief.

March 2.—To-day I found him in extreme agony, screaming and struggling in a violent degree ; at intervals he lies in a comatose state, taking no kind of notice of any one, and if disturbed, again recurring into the screaming paroxysms ; pulse 100, small and weak ; belly soft, of its natural size ; had a loose stool yesterday after the operation of the emetic ; tongue parched ; skin hot and dry ; drinks whatever is given him,but at times seems to swallow with difficulty ; will not take any thing in substance, but refuses not panada, gruel, &c. The pupils are dilated, the left rather more than the right, and they do not contract on exposure to a sudden and strong light†. I had his head shaved and bathed with vinegar ; the apparent ease it gave, made me persevere in its use for some time, till its effects ceased ; a blister was applied to the vertex, and three grains of calomel ordered twice a day. Ten o'clock, P. M. pulse 96, fuller and harder ; still continues in the same state, screaming and tossing his head about, unless held by the attendants, and will not be put off the lap ; although we cannot get him to speak, at intervals he seems to be sensible.

March 3d.—Pulse 100, weak and soft ; has had no stool ; belly still soft ; passed a restless and disturbed night, seemingly in great agony, moaning during the short intervals he was free from screaming paroxysms ; makes but little water, and that involuntary ; takes whatever fluid is given him ; continue saline mixture and calomel.

March 4th.—Pulse 120, belly soft, and no stool ; skin dry ; has made more urine, which is very high coloured, and what could be caught deposits a copious sediment ; rested better last night, owing to 15 drops of tinct. opium in his saline portion ; is more restless this morning, and screams with greater violence ; continue his medicine, and in the evening use an injection.

* Fever.

† I beg to draw the attention of my readers to this symptom.

March 5th.—Last night the enema was administered, which produced a copious evacuation; had a better night; was in a comatose state when I visited him, but upon disturbing him again, relapsed into his former screaming fit; he is nearly hoarse, and is much debilitated; the blister upon his head is nearly dry: apply a blister between the shoulders; continue medicine as yesterday.

March 6th.—Rested a little in the night, and is quieter to-day during the intervals of screaming; does not moan as usual; had another blister this morning, which operated like the former; skin rather moist; his nurse thinks his breath smells very fœtid; continue medicine.

March 7th.—Blister discharges very much; seems to be sensible at intervals, and answers with a monosyllable; the screaming paroxysm continues not so long or so violent; the pupils continue dilated, but not to so great a degree;* has had a natural stool; urine in greater quantity, but still involuntary; his breath continues fœtid; mouth a little sore; tongue moist, which hitherto has been the contrary: continue medicine.

March 9th.—He neither screams so often or violent as on the 7th, but is very petulant if disturbed; his pulse is very irritable; the blister still discharges considerably†; natural stool each day; slept little in the night, and what he has is disturbed; continue his saline mixture, calomel, and to take 20 drops of tinct. opium.

March 12th—The screaming has left him; the blister is in a healing state, and he is mending as fast as possible; diarrhœa having occurred, I have discontinued the calomel.

March 16th.—Every complaint has now left him, except debility; continues very petulant; the pupils are still dilated beyond their natural state, but contract on exposure to light; his appetite will now take any thing given him; give decoction of bark; omit opium.

April 1st.—Has now recovered his usual strength, and there is no appearance of any relapse.

* How this symptom of dilatation lessens with the disease!—*Author.*

† I trust my readers do not overlook the delightful operation of counter-irritation in this, as well as in all the preceding cases.

During the whole of the time I attended this patient, or since his recovery, which was rapid, considering the violence of the disease, he has voided no worm; nor is there present any symptom of their presence. I was led to present you with the above case, in consequence of Mr. White's asserting in your 12th number, that he saw no good effects result from the use of mercury, uncombined with digitalis; but can assure him, I have proved its efficacy in several prior cases, and the present recent one tends to convince me of its utility.

About four months ago, a child seven years old, who laboured under a complication of disorders, with slight symptoms of hydrocephalus, after lingering some time, and taking a variety of remedies, at length the disease terminated fatally. Upon examining the head, nearly two ounces of limpid fluid was found in the ventricle, but no other unnatural appearance was perceptible!

Mr. Salter, who in 1820 published some cases of this disease, premises with the following remarks on the use of mercury.

"It was unfortunate for the credit of this mineral, that, when its administration was suggested in the treatment of hydrocephalus, the pathology of this disease was not well understood, and, since further experience and an improved pathology do not warrant us in considering it in the light of a specific, or in trusting to its unassisted operation, it is not wonderful, that instances should have arisen wherein its powers frequently appeared inadequate to accomplish the intentions of those, who prescribed it. Indeed, it is still to be expected that, even under the most judicious use of mercury, and with other approved means, cases might occur in which the medical attendant will be obliged to witness the triumphant march of the disease, with only the partial satisfaction of having somewhat retarded its progress. This, however, is no more than occasionally takes place in complaints that no one thinks of denominating incurable.

"In giving it as my opinion, that mercury is one of our chief arms of strength in combatting this alarming complaint, I cannot deny myself the pleasure of expressing a belief, that the day is not far distant, when hydroce-

phalus will no longer be considered an opprobrium to medicine; and that medical men themselves will not view it in a more serious light than many other diseases that are commonly remediable. In a prophylactic* point of view, I think much may be done to lessen the frequency of hydrocephalus. Delicate children, of scrofulous constitutions, require great watchfulness, and a constant assiduity inthe pursuit of every measure calculated to invigorate the health, and to prevent the occurrence of any thing that might weaken the system; for I cannot but consider weakness, in connection with a strumous diathesis†, as the parent of this disease, as well, indeed, as of most others peculiar to delicate children. Dr. Yeates, in his letter to Dr. Wall, has done much towards awakening in the minds of medical men, a disposition to observe the early symptoms of hydrocephalus, as well as towards impressing upon their attention the necessity that exists for the most prompt measures to remove them. If a child be observed to be listless, laying down its head without any obvious complaint, the alarm should be instantly taken; for, in such a case, we shall seldom err in supposing, that there is, at least, a disposition to hydrocephalus; for frequently no other marked or conspicuous deterioration of the health has been noticed, previously to the accession of convulsions, than these symptoms. It is not uncommon, however, for a slight convulsion to occur in the beginning, and considerably to alarm the patient's friends; yet, immediately as the fit is over, the child appearing as well as before, their fears are soon dissipated, and, though he may not afterwards have had quite his usual spirits and activity, and may, perhaps, have been remarked to be a little feverish at night, still the minds of the parents are not alive to the alarming nature of the complaint, until the recurrence of convulsions, which may not take place for several weeks after the first attack.

"It were much to be wished, that every practitioner would strongly impress upon the minds of parents the insidious nature of the disease, and the necessity there is

* Preventive system. † Scrofulous disposition.

of giving immediate alarm, on the occurrence of any symptom indicatory of its approach. For the successful treatment of hydrocephalus much depends upon its recognition. In no other disease to which a practitioner may be called, is it of greater consequence to make an early and accurate diagnosis; for though in the infantile remittent fever, the disease which more than any other stimulates hydrocephalus, the same mode of practice is in some measure applicable, particularly as it respects the administration of mercurial purgatives, yet we should not in that disorder deem it necessary to employ such measures for the relief of the head, as are imperiously demanded in the one we are considering; for, if the inflammation of the meninges*, which may have been produced by morbid sympathy with the viscera, be not relieved by proper means, we shall often in vain attempt to ameliorate the abdominal affection, as the morbid condition of the brain, reacting upon the chylopœtic† organs, will perpetuate their derangement. I believe that Dr. Curry of London and Dr. Cheyne of Dublin were the first to point out, that hydrocephalus was often produced by a morbid sympathy of the brain, with a disordered state of the abdominal viscera, and more particularly with that of the liver; and it is remarkable, that these gentlemen should, about the same period, and without any communication with each other, have taken so similar a view of the subject. Having many years since had the advantage of attending the lectures delivered by Dr. Curry, I early became acquainted with the importance of paying attention to the condition of the abdominal organs, in the treatment of many cases of hydrocephalus. For the most part, the opinions I then imbibed on the subject, have since been amply realized by my own experience, and farther confirmed by the perusal of Dr. Cheyne's book on hydrocephalus acutus; of which, as well as of

* Membranes of the brain.

† An epithet denoting any thing connected with the formation of a milk-like fluid called chyle, which is formed some hours after eating, and is the fluid substance from which the blood is formed. It is a term which Mr. Abernethy applies to the digestive functions in the stomach and bowels.

that author's works on some other diseases of children, it is impossible to speak too highly.

"In his Anatomy, Mr. C. Bell has given us an excellent description of the structure and functions of the duodenum*; but we are more especially indebted to Dr. Yeates, for calling the attention of the profession to those morbid states to which its several peculiarities predispose it, and to the importance that ought to be given to them in the consideration of the ratio symptomatum and treatment of hydrocephalus. On the particular application of the remedies in the following cases, I have but little to remark; they may by some, perhaps, be thought not at all times to have been the most judicious; they, however, were such as appeared to me, at the time, to be essentially required for fulfilling the three great indications in the treatment of the disease. The first of these indications I consider to be, to remove the inflammatory action of the vessels of the brain; the second, to clear the bowels, and to restore and augment the healthy secretions of the chylopœtic organs; and the third, to establish a new action in the system. In fulfilling the last indication, especially in the case of children, I have found it more convenient to give calomel than to administer mercury by inunction†. I was first led to adopt this practice, from the prejudice and dread showed by the mother of Miss B. (who forms the subject of the first case) against mercurial frictions, during my attendance upon her son, a lad of five years of age, who died of hydrocephalus in 1813. When she became acquainted with my intentions, she not only forbade the employment of mercurial ointment, but the use of that mineral under any form. This boy might possibly have been saved, had I been allowed to treat the case as I thought proper: for the omission of mercurial medicines constituted the only difference in the management of the two cases; and, as it

* The first curvature of the bowels.

† A preceding case shows the impossibility of introducing mercury by any other mode than by that of inunction: let these facts have due weight, therefore, on the minds of my readers, in establishing that no fixed rule can be laid down. In some, inunction will be expedient; in others, the administration of calomel; and in many, the adoption of both will be desirable.—*Author.*

respects their identity, I have not myself the least doubt. In this opinion I am also supported by the concurrence of both parents. Since this period, to avoid these prejudices, I have been in the habit of depending wholly upon the liberal use of calomel, to excite the mercurial action; and finding it not only equal to the mode by inunction, but superior to it, (in as much as at the same time it produces its peculiar constitutional effects, it often occasions a free action of the bowels, a circumstance so urgently required in hydrocephalus,) I can with confidence recommend it to the notice of the profession, as a mode of practice from which the greatest advantages may be expected. I was much gratified at finding it adopted by so able a practitioner as Mr. A. T. Thompson, to whose interesting cases of hydrocephalus I would beg leave to refer the reader, for some further observations on the employment of this medicine. The use of cold lotions to the head, as recommended by Dr. Clarke, instead of blistering the scalp, is, I think, a great improvement in practice*. The plan, however, is not new; it certainly did not solely originate with Dr. Clarke. I had myself employed it long previously to the publication of his book; indeed, two of the cases that have given rise to this communication bear an earlier date than the appearance of Dr. Clarke's work.

Before I conclude these remarks, I would beg leave to make a few observations on the dilated pupil, and on the excretions from the bowels in hydrocephalus. Systematic authors have been accustomed to lay considerable stress on the permanent dilatation of the pupil, as indicative of an effusion of water in the ventricles, or upon the surface of the brain. Being a striking and obvious symptom, I was, on first entering upon practice, in common with others, in the constant habit of looking for it; but having had an opportunity of seeing several cases in which the disease terminated fatally without the occurrence of this sign, and as it is one not peculiar to water

* Let not my readers be led astray by this remark. Cold applications are advisable at particular periods: these are specified under my description of treatment. This topical remedy is not to supersede the use of blisters.—*Author.*

in the brain, I do not now regard it with that importance in forming the diagnosis, which I was formerly in the practice of doing. In this disease, however, the pupils are undoubtedly often dilated; but it cannot wholly, I think, be ascribed to the presence of a watery fluid compressing the brain; since such accumulations occur in other diseases of that organ, as mania, epilepsia, &c. &c. without occasioning such an effect. Moreover, as in early stages of the disease, when medical treatment has the greatest prospect of being attended with success, it is more common to find the pupils contracted: in a diagnostic point of view, this symptom cannot, then, at such a period, be considered of much moment; yet how often do we see practitioners searching, in the early stages of hydrocephalus, for a dilated pupil*.

As the effusion of an aqueous fluid within the cranium† is, with very few exceptions, preceded by an inflammatory action of the blood vessels of the membranes of the encephalon‡, I conceive that the absence of the contractile power in the circular fibres of the iris, as well as the strabismus§, imperfect vision, and coma‖, may more correctly be all ascribed to the accelerated motion of the blood in the brain, exhausting its excitability, and impairing its functions, than to the presence of water upon the surface, or in the cavities of that organ. By taking this view of the phenomena, much of the obscurity that envelopes the subject is, I think, removed, and we can readily understand why the pupils should be dilated in some cases, and not in others. If the above explanation be correct, the pupils are most likely to be dilated in those instances in which the inflammatory action has been most violent, and my experience concurs to confirm this opinion: for in those cases that I have seen, where

* This is the eresthismal state of Dr. Nicoll. I am decidedly of opinion, that the dilated or contracted pupil is no safe guide. Children in the highest health are subject to dilated and contracted pupil, without any evident cause; but when the pupil is insensible to light, there will always be spasm; but that spasm or convulsion may be from many other causes besides water in the head, as overloaded stomach, a fall, or from worms.—*Author.*

† The skull.

‡ The brain.

§ Squinting.

‖ Stupor.

the pupils retained their natural appearance, the inflammation was more of the atonic* kind; the eyes were but little suffused, the conjunctiva retaining a healthy aspect nearly to the last. In two of them, about three ounces of fluid were found in the ventricles; in another, five ounces; and in a third fatal case of the disease, I have observed in my notes, that the pupils were only dilated during the convulsive fits which occasionally occurred. At other times they were of their proper size, contracting and dilating naturally on the application and withdrawment of light. It now only remains for me to make a few observations upon the alvine excretions. In all corporeal diseases, it is very justly thought, that much information is to be obtained, by attending to, and observing the nature of these discharges; but in no disease is this more important than in the one under consideration.

Dr. Fothergill observes: "The stools are most commonly of a very dark, greenish colour, with an oiliness or a glossy bile, rather than the slime which accompanies worms." This account pretty accurately accords with that given by subsequent writers, and for the most part coincides with my own observations. The pitchy or tarlike appearance of the stools, which is sometimes present in this complaint, is of less frequent occurrence. In one fatal case of hydrocephalus that I attended, the patient passed several of this description, a short time before death. Dr. Cheyne supposes these green, gelatinous evacuations to be wholly a mixture of dark bile, and of the mucus of the intestines. In the conjecture, that they are chiefly composed of bile and mucus, he is probably correct; and the bile, if submitted to the test of chemical analysis, may not be found perfectly natural. In many examinations made for the purpose, in persons who have died of this disease, in no one instance have I been able to discover dark feculent matter, such as had been previously ejected from the bowels, above the colon. The small intestines were turgid with a bilious fluid of a natural hue, and the bile in the gall-bladder

* From the Greek words "from" and "to stretch," signifying defect of muscular power.

was in appearance of the most healthy quality; and in other diseases of children, in which green stools have been frequent, my investigations post mortem have invariably showed similar results. These circumstances have led me to the conclusion, that we are not yet acquainted with all the morbid changes that take place in the bilious and intestinal fluids, or what deviation from their natural state is necessary for the production of these dark green evacuations. I do not, however, mean to assert, that bile never comes from the gall-bladder, having the dark green aspect which characterizes these stools; but only in many dissections, carefully conducted, I have entirely failed in finding it of such a colour, either in that receptacle, or in any part of the alimentary canal above the termination of the ileum*. This, I think, proves that it is not at least so common an occurrence as, judging from the tenor of their writings, medical men have in general supposed. Mr. Burns, of Glasgow, seems to think, that this colour of the alvine evacuations may arise from the presence of acid in the intestinal tube; and as alkaline medicines do occasionally effect a healthy change in their appearance, it is perhaps not an improbable conclusion. Constitutional irritation, arising from any cause, will generaly produce green stools in children. This is shown by their occurring, more or less, in almost all infantile diseases; and calomel, which is so much given for the purpose of ameliorating the biliary secretions, I have had ample proof, will very frequently give rise to them. In the treatment of the diseases of children, I have often thought it necessary to discontinue the use of the submuriate of mercury†, that I might be better enabled to ascertain the real state of the hepatic system. From these observations, I think we may deduce the following practical conclusions, that we shall often fall into error by judging hastily of the state of the liver, from the appearances exhibited by the intestinal evacuations, without giving sufficient weight to causes, which we must admit, may of-

* One of the intestines.
† Calomel.

ten exist in the alimentary canal, capable of producing great changes in the aspect and nature of healthy bile.

Case III.

February 3d. 1816.—Jane Wallis, aged three years and six months, is of a fair complexion, with light hair, and blue eyes; she is small, and remarkably delicate in her appearance. In her infancy, she with difficulty recovered from a severe attack of pneumonia. Since this illness, she has rarely been well for any considerable period: her abdomen has been hard; bowels costive; and the stools often clay-coloured. She was last evening seized with a violent convulsion, which was preceded for two or three hours by a head-ach. This morning there was a return of the fit. A good deal of pain is complained of in the head. When asked where it is situated, she applies her hand to the vertex. The pupils are contracted, and the light gives her pain. She is at this time very irritable; answers questions clearly; and very distinctly, but with evident impatience; the tongue is covered with a white fur; skin hot; face flushed; pulse 150; she has been sick, and twice vomited. A leech was directed to be applied to each temple.

Take calomel, twelve grains;
Jalap, half a drachm;
Divided in six papers;
One to be given every three hours, until one or two dejections are produced.

4th.—The blood flowed freely from the orifices made by the leeches; and, though no more than two were applied, she fainted, for a short time, from loss of blood. Three of the powders having been taken, without producing any effect upon the bowels; she had yesterday afternoon a purgative enema, and she took in the night two powders, each containing a grain of calomel and a grain of antimonial powder; since which the intestines have been copiously evacuated. The discharges at first had a natural appearance; latterly, however, they were dark, and very offensive. Since the time the glyster was given, she has not been sensible, nor has she taken the least notice of any thing; passed a restless and feve-

rish night, frequently screaming violently; pupils contracted; pulse 120. I directed that she might be kept as much as possible in the erect posture, and that the head might be shaved, and have the following lotion constantly applied to it.

Æther, rectified spirits of wine, distilled vinegar, of each two ounces; make a lotion.

Take calomel two grains, divide into eight parts, and give one every three hours.

5th.—She had one dark green stool yesterday, and two of the same kind in the night, but she passes both fœces and urine without giving any information of it; of course, neither the quantity nor the quality of the latter can be ascertained. A blister was applied last night to the nape of the neck; it has risen well; she is now asleep; breathing natural; skin cooler; pulse 120*. The abdomen feels soft. On lifting one of the eyelids to observe the state of the pupil, it was found to be contracted almost to a point; but the child being roused by it, it became instantly dilated, almost to the whole extent of the iris. At the same time, the nostrils were expanded, the hands clenched, and she screamed violently†. Continue the lotion and powders, and apply a leech to each temple.

6th.—The leeches occasioned a considerable discharge of blood. Had three green stools, since the last report. She lies with eyelids half open, but closes them when a candle is brought near. The pupils are not so small; they contract when the eyes are exposed to light; the vessels of the conjunctiva are turgid, and there is increased secretion from the glands of the eyelids; she swallows a little gruel when it is put into her mouth. Passed a restless night; pulse 130. Continue her powders.

7th.—Accidentaly calling upon my little patient yesterday afternoon, I found her moaning more piteously; her skin was hotter, and the pulse more frequent, than in the morning; the pupil of the right eye was considerably dilated, and sluggish in its movements; that of the

* This case was therefore first treated with cold applications and now counter-irritatives. Let the effects of the latter be again observed in this place.

† This was a convulsion, during which the pupil dilated.—*Author.*

left was also larger than it had been observed to be; as she had no motion for several hours, I gave her at once, two drachms of castor oil, which by the evening, (when I again saw her,) had procured one stool. She was moaning as before, and continually moving her right hand towards her head, whilst the left lay motionless by her side. Has had rather a better night, and passed another dark green stool. She is now fretting, and the countenance has an aspect of great distress; the tongue is moist, though furred at the back part; the dilatation of the pupils observed yesterday is nearly gone; there is, however, slight strabismus. The blisters have discharged copiously; pulse 130.

Continued the calomel.

8th.—She slept four hours yesterday, and had one stool of a similar character to most of the preceding evacuations; she also passed a considerable quantity of urine. The eyes look more natural; but as she has neither taken any notice of surrounding objects, nor spoken since the second day of the attack, it is difficult to say what degree of vision she possesses, though it is evident that she does not see perfectly. For the first two days of her illness, the least noise would rouse her; but now, any sound may be made in the chamber without exciting her attention. Another blister was last night applied upon the nape of the neck. In the night she had a stool, which was somewhat improved in appearance: tongue cleaner: pulse 115.

Continued calomel.

9th.—On entering the room, she looked up as if to observe me. This is the first time that I have had an opportunity of examining the eyes, without myself lifting up the lids. They look clear, and the pupils are of the natural size, though there is yet a particular vacant stare, which is increased by the straining effort by which she opens her eyes. The expression of the countenance is that of distress and anxiety, and her face is pallid. She has had a dark green and glossy stool, and has vomited several times; skin cool; pulse 115.

Dress the blister with the sabine cerate, and go on with the calomel.

10th.—She has had a fit of screaming, which lasted the whole of yesterday. Since the last report, there have been four evacuations from the bowels, two very dark and fœtid, and two of a pale green colour. Has taken during the night, nearly a tea-cupful of arrow-root. She is quite incapable of drinking any thing in the usual way; therefore, whatever she has is given her with a spoon. Her mouth being constantly kept open, is at all times very dry, and requires to be continually moistened. The pupils are large, but their function is perfect; the vacant stare; she slept better than usual; pulse 108. The calomel has not affected the mouth.

Calomel 18 grains; divide in eight parts, one to be taken every three hours.

11th.—She has had a tolerable night; her expression this morning is much improved, and to-day, for the first time, her sensibility has been evinced by shedding of tears; she also moved her right hand, and once in a way more indicative of being directed by the will, by rubbing the eyes, &c. the left arm is evidently paralytic; it lies by the side motionless, as before; pulse 100.

Persist in the use of the calomel.

12th.—As she had cried and screamed nearly the whole of yesterday, and, on visiting her last evening, finding her very restless, I gave her then eight drops of the tincture of opium, which succeeded in removing the irritability of the system, and procured her a tolerable night. She has taken some nourishment; her look is more intelligent; and she has once attempted to speak to her mother, but was unable to articulate. Had three green stools; tongue nearly clean; pulse 120.

Omit the calomel, and in its stead, let half a drachm of mercurial ointment be rubbed into the thighs night and morning; and give her three grains of the essential salt of bark* every four hours.

* The sulphate of Quinine is the same as the above, viz. the alkali of Cinchonin; but which the French chemists chose to terminate their appellation in "ine," as Quinine. M. Pelletier had the credit of giving to the world this new remedy: it is here proved to have been long since known. The name which was originally given to bark was *Quinquina*, becasue the lady of a Spanish viceroy, the Comitessa del Cinchon, was cured of an ague by bark.

13th.—She screamed at intervals a good deal yesterday; notwithstanding, this, however, I found her in the evening still improving. I asked her to give me her hand; she instantly held it out; and afterwards took my watch, and looked at it for a few moments. She has sneezed a good deal during the day, as well as for several days past. The opiate was repeated last evening, but the night was not passed so comfortably as the preceding. This morning she sat up by her own strength, in her mother's lap, for a minute or two, and has for the first time, in reply to questions, answered in the monosyllables, Yes and No; but she speaks very slowly, and with great effort; the difficulty is probably augmented by the hoarseness which the screamings have occasioned, pulse 98; tongue nearly clean.

Omit lotion, continue medicine.

14th.—Passed a tolerable night; made a considerable quantity of pale urine. The eyes look intelligent, though the pupils are yet a little larger than natural; and she certainly does not see perfectly; for, when I held my watch at a little distance for her to reach it, she would sometimes put her hand on one side, and sometimes behind it, as if she had lost the power of measuring the distance of objects. When I desired, she would put out her tongue, which is clean; pulse about 100; appetite improving; she is unable to stand.

Go on as before.

15th.—Having had no stool yesterday, she took last evening two drachms of castor oil, which has occasioned a copious and natural evacuation. She has either forgotten the names of many things, or is unable to articulate them; she therefore experiences great difficulty in making herself understood, which frequently irritates her exceedingly. Her manner of speaking much resembles that of a child who has not learnt to talk. She does not use her left arm, and her inability to walk, arises from the same loss of power in the left lower extremity; she is, however, in all other respects better, pulse 100. The blister at the nape of the neck, dressed with savine cerate, has discharged very copiously, but is now to be suffered to heal.

Continue the essential salt of bark and the mercurial friction.

16th.—She now sees tolerably well, and talks better than before, though the sound of her voice is astonishingly altered. She is sitting in a little chair, with a stool before her, cutting paper, which she continues to hold, but most awkwardly, with her left hand. Had one stool of a healthy appearance. The rubbing in of the ointment is violently resisted, and is to be discontinued.

Take of mercury, with chalk, one drachm; divide in six papers; one to be given night and morning. Go on with the bark, and let the liniment with opium be rubbed into the left arm and leg twice a day.

18th.—The use of the left upper and lower extremities is progressively returning; but she is yet unable to walk. She, however, continues to get about the room, by the help of the chairs and tables, like a child who is learning to walk. The tongue is clean: pulse 90; bowels regular; and stools natural.

Go on with the medicine as before.

26th.—With the exception of slight weakness in the left arm and leg, the child appears to be in as good health as before the attack. She is both able to walk and to use her arm tolerably well; the appetite is good, and all the secretions natural.

She is allowed to leave off medicine.

29th.—I was requested to visit my little patient again this morning, not on account of any return of her complaint, but in consequence of the stools having assumed an unhealthy appearance, which circumstance, should it occur, I desired to be immediately informed of. Their unnatural appearance consisted merely in a deficiency of bile; I ordered the mercury with chalk to be resumed, and in a few days, the discharges were again natural.

The following cases shew the efficacy of the compound powder of Ipecacuanha.

A CASE OF ERETHISMAL STATE OF THE BRAIN, BY WHITLOCK NICHOLL, M. D.

"In the paper which I lately submitted to the notice of the Association, containing remarks on affections of

the cranial brain in infants, I described a state which I termed erethism: a state distinct from inflammation, in as much as there is, in the uncombined form of it, no perceptible increase of the quantity of blood-vessels. As the distinction of this state, and the knowledge of the separate existence of it, are in my opinion, points of the highest importance in the management of infantile disease; and indeed, in that of diseases of adults, I beg to remark, that I am every day more convinced of the justness of the distinction of the erethismal state of the cranial* brain from other conditions of the substance. It is a state often overlooked at its commencement, confounded with inflammation, or with remittent fever in its advanced stage, and the torpor which succeeds to it, and which after a time disappears, and is succeeded by a recurrence of the former symptoms which again lead to torpor, this is considered as the effect of the increased exhalation, to which after a time the brain accommodates itself, (to use a common medical phrase,) until a fresh effusion causes a renewal of the symptoms, whereas in many of these cases no increased effusion has occurred. Erethism is a state not confined to the cranial brain, but it also occurs in the spinal brain†, as do also all the other states which I enumerated in that paper.

"The following case, which is yet under my eye, illustrates many points which I have attempted to describe.

"Mr. Acton, a very intelligent Surgeon of this town, has an infant daughter, who is between eight and nine weeks old; she was from her birth, lively, very wakeful, scarcely ever sleeping during the day; highly sensible to impression, when she was scarcely six weeks old; she awoke as with a hesitation of breathing, and the muscles of the face were convulsed. She became still more restless, and was very fretful. Nothing amiss had ever been noticed in the character of her stools. She was suckled by her mother, a very healthy young woman. Her father gave her a dose of calomel, and put her into a warm

* The word cranial to the brain appears to me superfluous, since there is only one brain, and that is the cranium.—*Author.*

† This is quite a new distinction.

bath; the stool which succeeded to the exhibition of the mercurial purgative was perfectly healthy. After this, I saw the child: it started when the door was opened, or when a chair was hastily moved, or when any one coughed; or if any part of its body was touched, it cried very much, and very loudly; and was only appeased, and that momentarily, by being placed in a sitting posture, by being carried about, or by being put to the breast. The pupils were of a natural size; there was no vomiting, no heat of skin, no heat of the head, no flushing of the cheeks, no increased throbbings of the arteries of the neck and head. When this highly sensitive and wakeful state had continued for several hours, the child became gradually more heedless of noises, until at length it ceased to notice them; the crying then subsided, and the child bore a horizontal position; in this state, the eye appeared as if insensible to the light of a candle; the pupil, which was rather enlarged, vibrating as it were between contraction and dilatation, when strong light was thrown on the eye; the forearm bent on the arm; the fingers clenched, thumb laid flat across the palm; the upper extremities, in this state, raised in constant motion; the head sometimes moved about, but not much so; lower extremities sometimes suddenly drawn up; the lip moving; no moaning; occasional rolling of the eye; the eyes fully open; not a moment in which some muscles were not in quick action; the body bent backward. When this state had continued for four or five hours, sleep came on, out of which the child awoke, and appearing in its usual state, its arms pliant, its hands open; then came on the fretful, crying, restless state; then the torpid, restless state, during which the muscles were in constant action; the fore-arm bent; the fingers clenched as before; then sleep; after which apparent recovery; and thus did the sensitive erethismal state, followed by torpid erethism, by sleep, by recovery again, repeatedly run its course; the brain, after the highly sensitive state had been long kept up, gradually assuming a state approaching more and more to torpor, until its actions were at rest, and then was sleep present; but after a short rest, the brain

awoke to its original state. It was remarked, that when the sensitive state of the brain recurred, the bowels were relaxed, notwithstanding the use of opium; the eyes were suffused, the child sneezed, and had an increased quantity of moisture in the nostril, and of saliva from the mouth; when the sensitive state declined, the bowels were no longer relaxed; the coryza disappeared, secretion having been increased by the erethismal state. At one period, during the torpid erethismal state, there was complete opisthotonos* to a great extent, so that the spinal brain was affected also with the erethismal condition.

"The head, first of all, was blistered; during the state of Opisthotonos, the whole of the spine was blistered. The application of the blister to the spine appeared to give much relief; specially by its first operation; afterward it was thought to irritate too much. A grain and a half of Dover's powder was the remedy always resorted to; if given during the highly sensitive state it allayed the irritation, and when given during the more torpid state, sleep gradually came on; in one instance, the fretful and the sensitive state, and the more torpid state, occupied two nights and the intervening day, during the whole of which time, there was scarcely any sleep; none for a longer period than a few minutes; then sleep came on, which lasted several hours. The Dover's powder generally quieted the child in three or four hours. A tea spoonful of syrup of poppies had no effect at any time. Musk had no good effect. The muscular actions generally came on at night. I gave decoction of bark in one of the intervals, a tea spoonful every hour; I thought that this combined with the Dover's powder had a slight good effect; but it was not followed up, as Mr. A. thought, that the child was in pain after taking it. James's power made it sick. After the child had continued about a fortnight in this state, the train of symptoms being repeated every day, or every two days; it has continued for the last fortnight without any marked

* A spasm which either keeps the body bent backwards or forwards.

symptoms of disease, being better than it has been since its birth, yet there is still an absence of sleep during the day, so that I suspect, that their exists some congenital formation of the cerebral structure, which is incompatible with the long duration of health, and perhaps with that of life. The case as yet has been a well marked one of pure erethism, unmixed with the slightest perceptible alteration in the state of the blood vessels, and alternating with a more torpid state, which is the consequence of the previous highly sensitive state."

Case of Hydrocephalic Fever, exhibiting the Effects of Bleeding and Opium. By John Crumpton, M. D. Honorary Fellow of the King's and Queen's College of Physicians, Professor of Materia Medica, and one of the Physicians of Steeven's Hospital, &c. &c.

"That rare and uncommon diseases should attract the attention of medical practitioners is by no means surprising; it is natural that such should excite a lively interest, and it is useful that they should be recorded. It is only in this way that we can collect the history of diseases of unusual character, investigate their pathology, or establish a reasonable mode of treating them.

"It may be observed, however, that many diseases of daily occurrence, notwithstanding the most diligent exertion on the part of an intelligent and experienced practitioner, will baffle his skill, and refuse to give way to the ordinary mode of medical treatment. Those, therefore, who can suggest any improvement in the management of disease, a considerable proportion of which prove fatal, either by the discovery of new remedies, or by a varied application of those in ordinary use, will deserve well of the profession and of the public.

"It is in this point of view, that the mode of practice in fevers has been so much ameliorated, and that the mortality incidental to such diseases has been so much diminished; and this has been done, not by the discovery of any new specific remedy, but by a scientific and better understood mode in applying remedies, the medicinal powers of which have been long since appreciated.

"These reflections have been suggested to me by the notes of an interesting case, which occurred to me in September last, where there was every reason to apprehend a fatal termination by hydrocephalic effusion, but where the disease was subdued by persevering in a very active line of practice, aware of the difficulty that attends decisions in diseases of this character antecedent to death. I have given it the name of Hydrocephalic fever, in preference to Hydrocephalus. The symptoms were unusual in point of severity, and the sufferings of the patient scarcely to be exceeded. It had been my intention to have offered the history of the case sooner to this Association; but as a slight degree of mental derangement attended the convalescence, I waited the issue of this occurrence. All symptoms, however, of mental alienation have long since subsided, and the patient's convalescence has been followed by the complete recovery of his health, and the entire re-establishment of his understanding.

CASE.

Master F. aged twelve, was observed, during the first week in September 1816, to be unusually chilly; his schoolmaster attributed to idleness his inability to attend his studies as usual, and made a complaint to his parent. On the 7th, he had distinct rigors, and complained of his head; his head-ache was augmented by driving five miles on a car, and spending the day in the country; he struggled with his complaint until the 10th, when he was obliged to go to bed.

On the 11th, calomel and salts were given him by his parent; on the 13th, calomel and scammony; on the 15th, his fever was increased, his pulse 130, and delirium had supervened; a blister was applied between the shoulders, and the powders repeated; on the 17th, emetic tartar was added to his powders; they operated both up and down, but afforded no relief to his head, and obtained no abatement of his fever.

This was the account of his illness, which I procured from his parents, and from his medical attendant, my friend

Mr. Connor, who being obliged to leave town, consigned him to my care on the 18th of September.

He had been eleven days ill; his skin was intensely hot; not much flushed; he was heavy and drowsy; his eyes prominent; light gave him considerable pain; the pupils were large and sluggish, and contracted but slowly with a strong light or a candle; his pulse about 100, not very regular; it changed its rate of frequency on the least exertion; pain in his forehead and back of the head so severe, that he could scarcely bear it; he moaned constantly, and tossed his arms in every direction; on applying twenty-three leeches to the temples, shaving the head, cooling it with ice, and obtaining a few discharges from his bowels, he became cooler; his pulse at 88; but there was no mitigation to the pain in his head. In the night he was delirious; he screamed from intensity of pain in his head, shoulders and side; leeches were applied to his side on the 19th. Towards midday, there was a further increase of fever and of head-ache, the temporal artery was opened, and suffered to bleed *ad deliquium**; pulse in the evening was 90, and softer; but as the head-ache was in no way relieved, ten leeches were applied to the temples, and an opiate directed. He got some rest, but on the 20th his head-ache was as severe as ever; pulse 120; face flushed; eyes suffused; pupils closely contracted; this latter symptom was attributed to the opium; the temporal artery was again opened this day, and suffered to bleed until he was faint; little or no impression was made on the head-ache; his cries and moans were constantly heard; tremors were likewise observed in the muscles of the mouth and the forehead.

"On the 21st, after a quiet night procured by opium, twenty leeches were applied to the temples, and six ounces of blood were taken from the arm.

"On the 22d, pain of the head had, if possible, increased, and extended to the occiput† and back of the neck; pulse 100; twelve ounces of blood were taken from the arms; with some temporary relief; after which he remained pale and exhausted, in a quiet stupor.

* To fainting. † Back of the head.

"On the 23d, after a quiet night from opium, says he feels some remission of pain; moans less; pulse 100, soft and regular; eyes look dim and suffused; pupils closely contracted.

"24th.—He had another quiet night; pain now in the back of the head, and in the back; slight ptyalism from the mercurial medicines.

"25th.—Has been in a warm bath at his own desire; head much relieved; pain now most urgent in the course of the spine, so severe as to oblige him to cry out; pulse 104, soft and regular; mouth sore.

"26th.—An uneasy, delirious night; increase of pain in the back.

"Eight leeches were applied to the back, and afterwards a blister.

"27th.—Pain continues in the back.

"28th.—Eight leeches were again applied.

"29th.—Incessant moaning from the pain in his back; head-ache has returned; pulse 104; stools have become natural coloured; ptyalism continues.

"Six ounces of blood were taken from the arm, and a tranquil state procured by opium, after the action of a purgative.

"30th.—Slept a good deal, and though he moans, complains less of pain; was again in the warm bath.

"Oct. 1st.—Some sleep; was delirious towards morning; pulse 112.

"2d.—Was agitated and restless in the night, the opiate having been omitted; is perfectly free from head-ache or pain in his back; pulse 90, and soft; pupils unusually large to-day, and sluggish.

"Opium* with calomel again directed.

"3d.—Pupils less sluggish, pulse 100; an uneasy night.

"4th.—Another distressing night; pulse 100; weak, and somewhat irregular; complains much again of his head; is delirious even whilst awake, and under the influence of false perceptions; appetite returns.

"5th.—As yesterday.

"6th.—Raves, and appears deranged, but takes food ravenously; pulse 90; skin cool; tongue clean; salivation continues; eyes look natural; does not complain of pain.

* Whenever opium in this case was given, the pupils became closely contracted: whenever it was omitted, the pupils were dilated.

"7th.—Ravenous appetite for food continues; food tranquillizes his agitation.

"Delirium at night is appeased by opium, given in divided doses.

"8th.—Less irritable.

"10th.—Handed him over to Mr. Connor, who kindly superintended his convalescence.

"November 12th.—Convalescent, but foolish and strange in his demeanour.

"It is unnecessary to extend the reports of this case any further, than to say that the convalescence of this patient has been followed by complete recovery. There was for some time reason to apprehend a state of mental alienation: this appearance was, however, only temporary.

"As to the medical treatment, in addition to the detractions of blood, calomel was given to a considerable extent, throughout the whole period of the disease; sometimes it was combined with opium and digitalis, and sometimes with James's powder; salivation was excited; cathartics, chiefly liquid preparations of senna, and glysters were constantly administered. The excessive increase of temperature in the teguments of the head was kept cool, by the continued application of ice, whilst an equable degree of heat was maintained in the extremities by fomentations and the warm bath; opium was freely used, sometimes in divided doses in combination with the other remedies, and occasionally in a fuller dose proportionate to the exigency of circumstances, and the frequency of pain.

"The quantities of calomel, opium, digitalis, and James's powder given in this case, I have been induced to subjoin in the annexed table, with which Mr. Meredith, an eminent apothecary of Earl Street, has been so obliging as to furnish me*.

* I trust the reader has observed the connection of the spinal disease with this affection, which is so fully demonstrated by the symptoms which supervened on the 25th.—*Author.*

		CALOMEL. *Grs.*	OPIUM. *Grs.*	DIGITALIS. *Grs.*	JS. POWDER. *Grs.*
Sept.	15	8	0	0	0
	16	8	0	0	0
	18	20	0	0	0
	19	32	1	0	0
	20	18	1	3	0
	21	48	1	4	24
	22	20	1	4	16
	23	20	1	4	16
	24	20	1	4	16
	25	20	1	4	16
	26	12	1	0	8
	27	20	1	4	16
Oct.	2	20	1½	0	0
	3	20	1½	0	0
	5	20	1½	0	0
	6	—	1½	0	0
	7	8	0	0	0
	8	8	1½	0	0
	9	8	1½	0	0
	10	—	1½	0	0
	12	18	0	0	0
	13	6	0	0	0
	14	12	1½	0	0
	15	—	2	0	0
	16	12	2	0	0
	20	12	2	0	0
	23	12	0	0	0
Total,		402	26	27	112

Observations on Hydrocephalus Internus, with Cases to illustrate the Efficacy of Bleeding. Read before Dumfries Medical Society, 4th November, 1822. *By William Maxwell, M. D.*

"The following communication consists of observations on the treatment of that state of the brain expressed by a coincidence of symptoms which are generally found after death to have accompanied a deposition of water in the brain or cerebellum, but which occasionally prevail without effusion of fluid; death appearing in those cases to have been occasioned by inflammation of the substance of this organ, or of its membranes, or by abscess, hydatids*, encysted tumours, &c. I am, from this circumstance,

* Very singular animals, formed like a bladder, and distended with a watery fluid. They are often found in the brain, liver, kidneys, &c. are from the size of a pin's head to that of a gooseberry, and very often found in clusters.

disposed to use the term Hydrocephalus Internus, more in an abstract sense than as an expression strictly derivative.

"In the year 1795-6, previous to beginning regular practice, I saw about twenty-five cases of hydrocephalus internus, all of which terminated fatally. From this it was evident that the modes of treating this affection were inefficient, and that hopes of removing the disease must be founded on some new or more active treatment; as in many of the above cases the patients had in an early stage been very freely purged, bled with leeches, and in the arm; and in others a diarrhœa had prevailed from the first attack, and continued to an advanced period of the disease. It was thought proper to employ very copious blood-letting, in the way by which the largest quantity of blood could be rapidly abstracted from the head: this mode of treatment exceeded expectation, and was done in the following manner: and, as there was considerable danger of the patient sinking from inanition, it was thought a necessary preliminary to obtain the full consent of the parents to a measure attended with much hazard, and extremely painful to the feelings of the practitioner, by informing them, that after the usual mode of purging, moderate bleeding, &c. this distressing measure was the only mean by which the life of the patient could be preserved. I shall, out of nearly ninety cases, about sixty of which recovered, select two wherein the usual characteristic symptoms of the disease were distinctly marked.

"Master J., æt. 7, a healthy boy, became dull and indisposed to his usual exercise, complaining of head-ache, which, with much langour, increased during six or eight days. The bowels were frequently moved by purgatives. At this period pain in the head became more distressing, and the bowels were difficultly moved. The boy showed no inclination to leave the house; he rested frequently his head in his hands upon a table, or in a kneeling posture on a chair; the muscular power of his limbs began to fail; the pulse became rapid; pain of the head excessive, with occasional remissions, and during these, constant drow-

siness came on. Still, however, there was a considerable disposition to take food, although it was passed half digested. The mind now became indistinct, with inability to articulate; vision was imperfect; the evacuations took place without his attention; squinting next appeared; pulse 160; frequent expression of pain in the head; muscles in the neck became supple, the head rolling upon the breast and shoulders, with immobility of the pupils and total want of expression in the eyes; the face pale and inanimate. Mr. J., his father, a medical gentleman, requested that I would take the sole direction of the case, observing, that he was well aware that extreme bleeding was the only means by which the child could be recovered; desiring that it might be carried to whatever extent it might be thought necessary, and that, if the child should sink under such active treatment, he would still retain a warm sense of gratitude for the painful task which he had imposed on me. The time was fixed for the operation, and, with the father's consent, I invited my medical friends Dr. G., Mr. S., Mr. M. and Mr. St., to be present. The father, after providing every thing necessary, withdrew to a remote part of the house, waiting, with the anxiety of an affectionate parent, the fate of an only son.

"The boy was laid on a mattress, his head somewhat lower than the rest of the person, medical gentlemen holding each wrist; the jugular vein on the right side was opened; it bled rapidly; the stream was frequently interrupted to prevent fainting. The bleeding was continued till syncope began to take place: a little negus was then given; when the pulse revived, the finger was removed from the orifice and the blood allowed to flow, till the gentlemen agreed that the pulse could no longer be felt. The patient at this time had no appearance of life, and continued without the least symptom of animation for ten minutes, when he began to revive gradually; and in the evening more favourable symptoms appeared. His mind was remarkably improved, as well as his physical powers, being now able to articulate, although indistinctly, and to tell the hour on a watch. He had a tolerable night's rest, having taken frequently a little water-

gruel and beef-tea. During the following day there was but little improvement. On the third day the bleeding was repeated in the left jugular vein, and a complete recovery followed."

"CASE II.—In April 1816, I was called to see a child of Mr. B. ætat. 1¼. He had been affected with symptoms of hydrocephalus about seven days, had been repeatedly purged, and bled profusely on the head by leeches. I found the child very languid, insensible to moderate pressure or pinching; vision appeared to be entirely gone, eyes death-like without any expression; squinting with both eyes had continued during three days; uttering frequently shrill screams; the head rolled upon the shoulders, as if it had been attached to the trunk by muscle alone. He was bled in the neck, as in the last case, till the pulse could no longer be felt, and remained in this state during some hours before he began to revive. I left him at 11 P. M., and was so apprehensive that bleeding had been carried too far in this case, that I sent my servant next morning to enquire what had happened during the night, and was surprised by learning through him, that the child was so much better, that he saw him at the window in the nurse's arms, looking at two young cocks fighting in the yard. He recovered daily, and is now a fine healthy boy.

"In upwards of ninety cases that have been treated in this way, above sixty have recovered. In most of these I have had the assistance of one or more medical gentlemen of this place. Bleeding was generally repeated, as the constitution could seldom bear at one operation a subtraction of blood sufficient to remove the malady.

"It may fairly be objected to the success of this treatment, that hydrocephalus internus did not exist in the above sixty cases, but that other causes might have produced delusive symptoms. I confess that I cannot give an answer sufficiently satisfactory, and that I cannot meet the objection by any better proof than by analogy; for, owing to the aversion that prevails in this part of the country to the examination of the dead, it was with much difficulty that I was allowed to inspect seventeen or eigh-

teen heads out of the twenty-seven. In all of these, with the exception of eight, from one to four or six ounces of fluid were found in the ventricles or within the membranes. As the cases of recovery did in almost every symptom resemble those that terminated fatally, where the heads were allowed to be opened, we may analogically be allowed to infer that the disease in both was the same; and, without better proof, to consider such close analogy a legitimate conclusion*. In the other eight cases, above alluded to, the quantity of water did not exceed half an ounce. In the first of these, a cyst, containing about four ounces of fluid, communicated with the right lateral ventricle: death took place at the end of seven months. In the second, there was suppuration in the middle of the right lobe. In the third, three round tumours of indurated cerebrum were found in the cerebellum. In cases fourth fifth and sixth, much inflammation of the membranes and substance of the brain had existed. In the seventh, suppuration in the *thalmi nervorum opticorum*†. And in the last, excessive inflammation of the membranes, with some pus, was perceived near the *foramen magnum*‡."

"*Dumfries, 4th Nov.* 1822."

On Apoplexia Cephalitica, shewing the Effects of Dover's Powder, Turpentine, and Green Tea. By Dr. Stoker.

"As may be readily supposed, I feel extremely loath to incur the risk of attempting any alteration in nosological nomenclature, a subject which has engaged so much attention from those highly qualified to judge of, and to overcome the difficulties in which they found it involved. I however, think myself warranted by such facts as I am about to lay before the Association, in proposing that Dr. Cullen's 3d species of apoplexy should be subdivided, and separately considered under two distinct varieties. The first to be named Apoplexia Cephalitica, and the other Apoplexia Hydrocephalica. Under the former variety, all such cases as the annexed might be arranged; in

* I have no doubt Doctor Ayre would differ in opinion with Dr. Maxwell. See page 146.—*Author.*

† Two bodies which form in part the optic nerve.

‡ A large aperture at the back of the skull.

which, though many, if not all the symptoms, which compose the present extended definition of Hydrocephalus were present, yet probably no preternatural lymphy effusion, as implied in the name of the disease, had taken place.

"To illustrate this opinion, and to meet an objection that might be made to the proposal, namely, that its object is already embraced in the division of the disease into stages, I will *in limine* briefly relate a case which I attended, along with my learned friend Dr. Grattan, in the summer of the year 1815.

"A young gentleman, in about the 11th year of his age, laboured under severe fever for twenty-two days, during the eight last of which, notwithstanding that general and local blood letting, as well as other active means, had been employed, acute head-ache, delirium, tossing the hands to the head, strabismus, dilatation of the pupils, and impaired vision supervened; yet, on the most minute examination of the brain made by Mr. Kirby the day after death, no effusion or disorganization could be detected in it, excepting that when the cranium was first removed, the encephalon seemed to us to be in size more than proportioned to the bone that contained it, and to expand itself considerably over the under section of the base of the cranium.

"In the apoplexia febrium continuarum*, I have also often witnessed the pulsus tardior†, pupillæ dilatatio‡, strabismus§, as well as other symptoms which are given by minute historians of disease, to denote effusion or disorganization in the brain; but that neither had taken place might be inferred from the rapidity with which these symptoms sometimes disappear on the removal of the causes which tend to, or increase that unequal distribution of blood in the system, so remarkable in many cases of fever or great debility; the causes that I mean are, obstruction from infarction of the lungs or digestive organs, impeding the free return of blood from the head.

"That diminished action of the large vessels of the brain, to which, from their structure, they are most liable, chiefly tends to induce morbid turgidity in them, ap-

* Continued fever attended with apoplexy.
† Weak, slow pulse.
‡ Dilated pupil.
§ Squinting.

pears probable, not only from the concomitant symptoms during life, such as livid or pale complexion, cold and clammy skin, slow or unequal pulse; but also from the appearance, on examination, of those who die of fever, attended with affections of the head, the large vessels being found gorged with blood, and the capillaries, the known seat of inflammation, shewing no marks of having suffered from morbid action. A diagnosis between these varieties that I have now ventured to name, is a very important desideratum in a practical point of view: it would prevent a twofold evil, which has hitherto existed; fallacious hopes being indulged in one form of disease from means that removed the other; and on the other hand, their failure in the former, deprive them of their merited repute as remedies for the latter: but it would require that the symptoms peculiar to each should be noted with great accuracy in a greater number of cases than I have yet observed, to attempt to give such a diagnosis. Inquiry, however, into the predisposing and exciting causes, and the relative degrees of the symptoms, very generally assist me to form the distinction with tolerable certainty; and hoping that a collection of such cases as the following, may afford some aid towards this object, I beg leave to lay it before the Association; and in a few concluding observations, I intend to notice the apparent efficacy and modus operandi of the remedies I employed."

On Dover's Powder. By Dr. Stoker.

"Miss Catherine W——, Parker-Hill, Rathmines, had been until the present illness, an animated healthy child—is four years of age. On or about the 25th Oct. 1817, she became restless and fretful, nauseated food, skin becoming hot and dry, face flushed, and belly costive, and seemed to suffer extremely from pain in the head.

"For these symptoms, strong purgatives and leeches had been employed by a respectable surgeon, who had attended, previous to my being called on. The purgatives had little effect; the leeches had caused a plentiful discharge of blood from the head: I learned these particulars from Mr. Mansfield, Charlemont-street, not having the satis-

faction of meeting the gentleman who preceded me, his residence being remote.

"On this day, November 3d, 1817, the patient is constantly moaning and agitating the limbs; the hands being often applied to the head; she sometimes utters a shrill scream, especially when moved; her face pale and somewhat jaundiced, its lineaments being shrunk, the skin dry, but little hotter than natural; pulse rather indistinct and unequal, but as nearly as could be counted 160; her muscles in general very rigid, especially over the abdomen; and there is an evident preternatural fulness in the right hypochondre, apparent loss of vision, the direction of the eyes not being affected by a lighted candle, or any other attractive object being passed near them, neither do the pupils, (which are dilated, especially that of the right eye,) contract on the near approximation of light; some strabismus, cornæ lucideæ* dull, although the eyeballs have a glazed appearance; stools very scanty and green, urine scanty, the stomach quickly rejects either solids or fluids; no sleep the last day or night.

"She was immediately immersed, to the neck, in a water-bath, temperature 98°, for eight minutes, during which time a sponge filled with cold water was applied constantly to the head. On her removal to bed, the pulse was more distinct, and muscular rigidity less: turpentine enemata were directed, and compound infusion of mint to settle her stomach.

"As soon as they could be taken, small doses of calomel and scammony to be frequently repeated; the warm bath and cold application to the head to be used in the evening, and six grains of Dover's powder and two of James' powders to be given on being removed from the bath, and a similar dose at midnight; camphorated oil to be rubbed on the abdomen and spine, and a blister to the right hypochondre.

"November 4.—The purging powder and enemata produced several scybalous† stools; the blister has vesicated well; got some sleep after the first anodyne powder, and slept still more quietly since that at midnight, nor has she screamed more than once or twice since; the rigi-

* The transparent part of the eye, through which the rays of light pass to the expansion of the optic nerve, which is called the retina.

† Hard lumps of excrement.

dity of the limbs and belly is very much diminished, and the skin softer, but she lies more comatose, and breathing somewhat stertorous, eyes and sight not apparently improved.

"The remedies, as yesterday, to be repeated, and one table-spoonful of strong infusion of green tea to be given every second hour.

"November 5.—Fæces and urine passed more freely after the use of the purgatives; she relishes the tea, and it seems to have relieved both coma and vomiting. Though she took the anodyne powders last night, as before, pulse 140, more distinct. When roused, she tosses the head and limbs a good deal, and still applies the hand to the head; the rigidity of muscles is entirely removed, the eyelids remain separated when she is asleep, and when awake the eyes have a vacant stare, so that the loss of vision is more perceptible; the pupils are still dilated, and cornea dull; she, to-day, however, knows her mother's voice, and cries when absent from her. For a while, this morning, the pupils seemed to Mr. Mansfield to be more sensible when he examined them, and exposed them to a strong light.

"No alteration in the plan pursued yesterday, except that the infusion of roses and Epsom salts was substituted for the purging powders.

"November 6.—Purgative mixture is not as effectual as the powders were: she however slept tranquilly after the anodyne powders, and seems better to-day, but the appearance of the eyes not perceptibly changed, skin a little softer, pulse 130.

"The calomel and scammony were resumed, and the other remedies advised to be continued as yesterday.

"November 7.—Bowels were well freed, fæces natural, urine free, tongue, which can now be protruded, is loaded but soft, appearance of eyes and countenance much improved; the pupils contract slowly on the approach of light; pulse 120; drinks freely and greedily.

"Continue remedies.

"On the 8th, amendment was still more apparent, and Mr. W.'s being at a very inconvenient distance from my house, Mr. Mansfield undertook to superintend the child's convalescence; and from him I was happy to learn, though

recovery proceeded slowly, it was constant, and health and perfect vision were entirely restored in about eighteen days after I last visited my patient.

"In a retrospect of this case, I am by no means inclined to overlook the share which the remedies employed at its commencement had in producing the favourable result. The effect of the purgatives then administered must have moderated fever and diminished the torpor of the intestinal canal, and the detraction of blood by leeches, most probably counteracted very considerably the over-distension of the vessels of the head (by diminishing the supply) which otherwise would have destroyed their contractile power, on which recovery depended, when the distending cause was removed.

"It would seem as if that the action of blood-letting in such cases is two-fold, lessening the mass of blood which is the pabulum of the disease in the debilitated vessels affected; and secondly, by the disincumbering the vascular system in general, becoming directly stimulant, and thus increasing the powers of the propelling fluids through them. The first effect is obvious, and the second may be implied from the quickening and strength of the pulse, which is generally observable in such cases, where blood-letting is beneficial—the quickening of the pulse being, as I believe, a favourable criterion, as it generally takes place, if re-action has not been destroyed by over-distension or effusion on the organs affected. From the foregoing view of the modus operandi of blood-letting in apoplectic affections, and the blood effused in critical epistaxis*, when favourable, being arterial, I have always preferred taking blood from the temporal artery, whenever I deemed bleeding advisable in such cases, and am of opinion it is the most efficacious mode; and I think I am warranted by experience in making another practical observation:—That blood-letting often appears prejudicial when employed as a preventive of apoplectic affections, unless on their imminent approach, probably from its well-known tendency to promote sanguification.

* A bleeding at the nose, with pain or fulness of the head.

"Each of the other remedies employed in this case seemed useful; I had often before witnessed good effects from the warm bath, and cold applications to the head in similar affections; the blister, too, which I had employed on account of the fulness in the right hypochondre, and from having a favourable report made to me by Mr. McCarthy of Aungier-street, of that remedy in cases supposed to be hydrocephalic, probably was beneficial here also: but the relief that succeeded the administration of James' powder and Dover's powder combined, was unquestionable.

"Soon after I had heard the favourable accounts given of the Rev. Singleton Harpur's trials of James' powder employed in hydrocephalic affections, I prescribed them in several apoplectic cases both in my private and hospital practice, and published the result of my experience in the *Dublin Medical Essays, and subsequently† on other occasions: and though the explanation, which I then attempted of its mode of action, be imperfect, I do not yet feel justified to make any change in it.

"The observations lately published by a learned member of our Association, are also highly favourable to its being a remedy in apoplectic affections, and have the additional weight of unbiassed evidence, as it does not appear that he was conscious of my previous recommendation of this powder.

"The valuable paper lately published by our late worthy president‡ in the Transactions of the Association, on his and Dr. Percival's experience of the use of Dover's powder in hydrocephalus, and the very ample and able reports of the trials by Doctors Cheyne and Crampton, render it totally unnecessary to occupy more time on that subject."

Effect of Turpentine with Green Tea on the Brain. By Dr. Stoker.

"A married lady, 30 years of age, who weaned a healthy child from her breast about a month previously, was on the 9th of February, attacked with fever, and on the 20th

* See Dublin Medical Essays, anno 1806.
† See Treatise on Fever, 1814, page iii.
‡ Doctor Brooke.

of that month, the day on which I first saw her, she laboured under the following symptoms: countenance anxious, with a dark circumscribed flush on the cheeks, eyes suffused, the vessels on the cornea turgid, tongue brown and dry, teeth covered with a scum of carneous consistence, low delirium, pulse very indistinct, no sleep, frequent moaning, general debility, hands tremulous; she lies on the back, sliding imperceptibly towards the foot of the bed; her skin clammy, and thickly covered with large dark petechiæ; bowels have been well freed by calomel, and draughts composed of turpentine and castor oil, assisted by enemata; alvine discharges very dark and offensive; urine pale, violet odour.

"A table spoonful of barm with two of camphorated mixture every second hour; the head to be shaved, and washed with vinegar and cold water; the arms, face, and shoulders also to be washed in like manner; claret and water, soda and barley water for drinks.

"21st. No very remarkable change in the symptoms; face flushed; pulse 140, but firmer; more delirium; the temporal and carotid arteries throb violently; alvine discharges less dark and offensive.

"Five ounces of blood to be taken from the temporal artery, and a blister to be applied to the nape of the neck: the remedies to be continued as directed yesterday.

"22d. Scarcely one ounce of blood was taken from the temporal artery; general debility much increased, pulse 150 and feeble, tongue dark brown, petechiæ nearly disappeared, bowels free, abdomen soft and empty.

"Continue the remedies; a blister to the vertex.

"23d. Had three convulsive fits in the course of the night accompanied with screaming, pulse 150 and small, abdomen swelled and tense; no urine passed through the night, otherwise little change.

"The abdomen to be rubbed with camphorated oil; hypogastrium to be stuped with flannels and hot water; a draught with castor oil and turpentine to be immediately given, and four grains of Dover's powder. The claret and other drinks to be continued.

"Evening.—No urine passed in the course of the day, and the fundus* of the bladder is to be felt rising over the

* The upper part of the bladder.

symphysis pubes*; no screaming nor convulsion since our last visit; nearly three pints of urine, having a strong violet odour, was then drawn off by the catheter.

"24th. Lies in a very comatose state, no urine passed, some hiccup, stomach rejects the ingesta, retains the fluids taken into the mouth a long time, and swallows them with difficulty.

"Let two table spoonfuls of a strong infusion of green tea be given every second hour, and a weak infusion of it be for common use.

"Evening.—Much more animated, swallows easily, no vomiting, urine passed freely, but sometimes involuntary, pulse 100, bowels free, relishes the tea.

"25th. Had a quiet night, pulse 96, makes no complaint.

"Continue the tea.

"26th. Convalescent. Recovery was afterwards progressive, until complete.

"This patient was attended previously to my being called in, by Surgeon Adrien, and afterwards conjointly with me."

Mr. Money's Case, on the Effects of Turpentine on the Brain.

"*Case* 5.—A boy, nine years old, had, when at the age of five years, a strong epileptic fit. He had another less severe in three weeks; this was followed, after short intervals, by others, differing in their degree of violence. For the last two years he has been in a state of idiotism, and has not passed one night during the last thirteen months without a fit, and he has frequently had them in the day. One night he had twelve. His urine is passed involuntarily; but he has the power of retaining his stools, which are very irregular, and his bowels are generally costive.

"This boy commenced the use of the ol. terebinth. rectif.† on the 15th of February, and left it off on the 7th of April; and during the period here indicated, he took of

* Symphisis, from the Greek words "together" and "to grow," and pubes, the groin. It is the front part of the pelvis, immediately over the bladder, where the two front bones are united.

† Rectified oil of turpentine.

it two pints and ten ounces. It was administered at first in the doses of half a dram four times in the day, and the dose was at length increased to three drams, which was not at any time exceeded, whilst it was continued for nine successive days.

"From the 15th February to the 1st of March he had nineteen fits, which occurred after longer intervals, were less severe, and of shorter duration than heretofore. From the 1st of March to the 28th of the same month, he had no fit. On the 29th he had a very weak fit, which lasted about five minutes. From the 29th to the 16th April he had not a recurrence of the paroxysm. On the 16th of April he left the hospital at the request of his parents.

"The changes that resulted from this treatment were as follow:—

"1st. The pulse at the commencement was irregular, small, and quick. On the ninth day of the treatment it became regular, but continued small and quick. This regularity was disturbed for a few days; but ultimately the pulse was free, soft, and regular.

"2dly. The bowels were slightly purged, and regular. No worms were voided.

"3dly. The incontinence of urine was entirely obviated.

"4thly. The fits, when they occurred, were less severe, and took place only after longer intervals, and the patient had but one fit during the subsequent six weeks, and that lasted only four or five minutes. And,

"5thly. At first his intellects were so dull, that he was perfectly idiotic: when he had taken the medicine about three weeks, he became noisy, mischievous, and very troublesome, and occasionally would point to his head as if in pain there. In this state of cerebral excitement he continued for a week. He then improved, and the amendment continued progressive, showing itself by a remarkable docility of disposition, and by a desire to read and write."

Case of Epilepsy. By David Williams, M. D., Liverpool.

Sarah Bromhead, aged 11 years, of a delicate frame and dark hair, has for the last six months been ailing at

different times, and subject to cramp in the upper and lower extremities, when the latter were invariably thrown across each other. She has been under the care of several medical gentlemen, who, I am informed, considered her indisposition to be the effect of worms in the intestinal canal, but none have been observed *in her dejections.*

"January 6th, 1823.—Complains of frequent lancinating pains in the left temple, extending to the eye, and sometimes down the side of the face to the chin, and a fixed acute pain in the epigastric region, which is alleviated by pressure, and sitting with the body inclined forwards. Has also been subject to convulsive fits for the last fortnight, which are generally preceded by a momentary sensation of weakness. They recur at intervals of an hour and a half, or two hours, and continue from a quarter to half an hour. During the struggle, she occasionally shrieks; and the muscular agitation shifts irregularly from one part of the body to another, affecting the limbs of the left side more particularly. In the absence of the paroxyms, she is troubled with involuntary motions of the muscles of the face, neck, and extremities. She is pale and emaciated, pupils dilated, left eye dull, suffused, with the external angle of the lids drawn towards the temple; pulse 70, and regular; no throbbing in the temporal arteries; tongue moist, and whitish in the centre; bowels slow; abdomen lank and soft; appetite good; urine scanty; thirst inconsiderable; skin cool and moist; itching of the nose.

"Take rectified oil of turpentine, six drachms; essential oil of lemons, five drops; peppermint water, one ounce. Make a draught, to be taken immediately, and to be repeated at the hour of rest*.

"7th.—No return of fits since the first draught was taken; is free from spasmodic twitches, and the contraction of the external angle of the eyelids is relaxed. No motion.

"Repeat the draught at bedtime.

"19th.—*Mane*†.—No recurrence of complaints; her health is much improved. Four draughts have been ta-

* These prescriptions are translated from the Latin, in which they were written.—*Author.*

† Morning.

ken since the 7th; they procured several copious, dark-coloured evacuations, some of which contained fragments of a membraneous substance, in appearance resembling the villous coat of the intestines. Bowels have been regular for the last week, without the aid of medicine.

"*Vespere**.—About four o'clock in the afternoon had a convulsive fit, which lasted two hours. When she recovered from the paroxysm, she was speechless, and still remains so; yet she possesses the full command of her tongue. The uvula† and epiglottis‡ appear natural, and there is no uneasiness felt about the throat. When she attempts to articulate, can only utter a whirring noise. She is sensible, and writes answers on a slate to the questions asked her. No headach; pulse 70.

"Take the antispasmodic draught immediately, and apply a blister to the back of the neck.

"20.—Visited along with Dr. Traill. We were told that she recovered her speech about two o'clock in the morning. At first she articulated indistinctly, and was very talkative. Present state. Her ideas seem to wander, but when interrogated she replies rationally. Her hands are ever employed; every now and then she starts suddenly to walk about the room, and endeavours to go out; the muscles of the face, neck, and upper extremities are frequently affected with diseased action; she complains of constant severe pains in the left temple, and in the epigastric and hypochondriac regions; noise in the ears; pupils dilated; pulse 68; tongue clean; skin rather hot; no motion since yesterday forenoon. The head is well proportioned, and there is no deformity of the spine; on drawing the fingers along the spinous processes, there is an evident tenderness about the inferior dorsal vertebræ; no debility of the extremities. She has taken such an aversion to the terebinthinate draughts, that we cannot prevail on her to repeat them.

"Shave the head, and apply cold cloths to the head.—Take of sulphate of zinc twelve grains, with crumbs of bread; make twelve pills;

* Evening.

† That small conical fleshy substance which hangs over the root of the tongue.

‡ An elastic cartilage at the root of the tongue.

give one every three hours, inject immediately. Clyster to contain five drams of turpentine.

"21st.—Aberration of mind; no fit since the 19th; pain in the epigastrium relieved; enema operated twice, and has occasioned strangury and tenesmus.

"Continue pills.

"22d.—Had three fits yesterday afternoon; they were preceded by the same premonitory symptom as noticed above, and succeeded by aphonia*, which continued from half an hour to two hours. I witnessed one paroxysm, during which the jaw was firmly closed, the eyes reverted, and all the voluntary muscles were affected with cronic and rigid spasms alternately.

"Continue pills.

"22.—Visited with Dr. Traill. Has had several fits; the left side of the tongue was observed to be slightly paralyzed during the continuance of the aphonia. The dorsal vertebræ† have not been susceptible of any uneasiness on pressure for two days past; but when the spinous processes of the two inferior lumbar vertebræ‡ are pressed, however lightly, she instantly flinches; yet she feels no pain in the back on motion, nor is there any perceptible lesion§ of the part affected. Upon inquiry, it seems that last September twelve months she slipt down stairs, and injured her back about the tenth dorsal vertebræ, which rendered her incapable of walking without assistance for a week or nine days; ever since, on the least fatigue, she has complained of a weakness and a slight aching in the back generally‖. She is very loquacious, and her countenance appears rather wild; the pain in the hypochondres is so excruciating as to compel her to keep the body bent forwards; bowels open; skin cool and moist; tongue clean; no thirst.

"Omit pills; apply melted potash or caustic kali to form an escar on the side of the back bone where it pains; and rub half a drachm of

* A suppression of the power of utterance.
† The spinal column at the back.
‡ The spinal column at the loins.
§ From the French, damage or injury.
‖ See page 119.

mercurial ointment inside of the thighs night and morning. Take calomel twenty-four grains; confection of opium, as much as will make up twelve pills; give one night and morning.

"24th.—About half an hour after the application of the caustic, the pain suddenly left the hypochondres. Mental alienation, fits, spasmodic twitches as before.

"Continue medicine.

"28th.—No amendment; pulse 90; bowels regular; mouth begins to be affected with the mercury.

"Intermit the pills. Continue the ointment.

"February 1st.—Is more turbulent; the aphonia, paralysis of the left side of the tongue, the fits, and the spasms in their absence, are aggravated. During a paroxysm this morning, she was observed to be conscious; sleeps tolerably well at night; gums and breath under the influence of the mercury, but no increase of secretion of saliva. The sight and hearing of the left eye and ear impaired.

"Omit the mercurial frictions.—Take ten grains of lunar caustic or nitrate of silver; rub down well; and add crumbs of bread as much as is sufficient to make twenty pills; one is to be given every three hours.

"2d.—The sight of the left eye lost; the iris is as sensible as that of the right, and no difference is perceivable in the appearance of the two eyes. The hearing of the left ear is also lost.

"Continue pills.

"4th.—Awoke this morning with her intellects perfectly restored, and has had no fits since yesterday forenoon. Spasmodic twitches recur at times in the muscles of the left eye; *tinnitus aurium** ; bowels regular; issues begin to discharge, and there is but little tenderness felt on pressing the spinous processes of the inferior lumbar vertebræ. The first day the nitrate of silver was prescribed, four pills were taken, and six every day since; the dose to be augmented to three-fourths of a grain.

"10th.—No return of complaints, with the exception of occasional pain in the left temple, and slight catchings of the hands, excited by surprise the day before yesterday. In the forenoons of the two last days, she had been re-

* A tingling in the ears.

peatedly able to discern the light for short periods with the left eye, and at intervals to hear indistinctly loud sounds with the left ear. There is no uneasiness felt on examining the spinous processes of the inferior lumbar vertebræ. The issues discharge well.

"Increase the dose of nitrate of silver one grain.

"15th.—During the whole of yesterday, the left eye at intervals was capable of discerning the light; the hearing is also improved. Upon any sudden emotion, slight spasms continue in the right arm and left eye.

"Continue pills.

"24th.—Sight and hearing restored; has been exempt from all morbid feelings for several days. She continued the nitrate of silver until the 31st of March, when it was relinquished, and the issues were allowed to heal. I saw her for the last time in June in good health; since then, her parents have left Liverpool.

Liverpool, 1824.

Case of Hydrocephalus, successfully treated by the Removal of the Water by Operation. By James Vose, M. D. of Liverpool.

"On the 11th of July last, I was requested by Dr. Formby, my friend and colleague at the Liverpool General Dispensary, to see a case of advanced hydrocephalus with him. The patient was an infant of seven weeks old, whose head was enlarged by the accumulated fluid to between two and three times its natural size. But little ossification seemed to have taken place since the birth of the child, shortly after which the mother noticed the preternatural and increasing size of the head. The enlargement had been progressive from that time, and the head had become so transparent, that when held between the eye and the light, it was not unaptly compared to a paper lantern.

"The child, at the time I visited it with Dr. Formby, being free from any additional symptoms indicating a serious affection of the general health, with the exception of a slight derangement of the bowels and occasional convulsions, we thought this a favourable case for the

experiment of gradually discharging the water from the head by puncture. The operation was accordingly performed the next day, by means of a couching needle of the size and shape formerly in use. Three ounces and five drachms of limpid fluid were discharged, and the opening was closed with adhesive plaster, a roller being at the same time applied round the head. After the discharge of this small quantity of water, the head lost its tension and globular form, and became so flaccid as to allow the water to gravitate backwards while the child was laid upon its mother's knee, giving to the loose integuments the form of a pendulous bag. About an equal quantity of water dribbled from the orifice after the operation, and the child sunk so extremely low as to create the greatest alarm in the mind of the mother, and induce her to apply to the Dispensary for assistance at midnight. The child, however, revived without the aid of medicine, and the water again accumulating, the head became as tense as before in a very few days. On the 29th of July the operation was repeated. I was less cautious in the mode of the puncture and the quantity of fluid abstracted on this occasion: the operation was performed with the curved and pointed bistouri of my pocket case, and five ounces of fluid were evacuated.

"No unpleasant consequences followed, and the head having regained its former size, it was a third time punctured on the 20th of August. Eight ounces of the contained fluid were now discharged, and no constitutional disturbance succeeded to the operation.

"The head was punctured for the last time on the 29th of August, and a small grooved director being introduced into the orifice, twelve ounces of the fluid were drawn in a continued stream.

"The head on this occasion became so flaccid and shapeless, that the mother was shocked at its appearance, and fearful of the consequences of raising the child from her knee. No derangement of the health followed this fourth operation.

"It was observed, that between the first and second operation, the relaxed state of the integuments had

allowed the process of ossification to advance in a perceptible degree. This was still more remarkable after each of the succeeding operations; and before the last, the sagittal suture, which had at the commencement of the treatment divided the frontal bone as low as the nose by a wide chasm, was entirely obliterated at this part, by the union of the two opposite portions of the bone.

"A short time after the last operation, the child was perceived to discharge a considerable quantity of water by the bowels;—this at first took place with the natural motions; but afterwards the water, resembling in its sensible qualities that discharged from the head, was evacuated alone, and continued to be so for four or five days. The same low state as followed the first puncture of the head, took place on the second day of this discharge from the bowels, and it was particularly remarked, that a diminution of the size of the head had corresponded with the quantity of water thus evacuated. Ossification now advanced with greater rapidity, and the bones of the head are at present nearly as complete as is usual in a healthy child of similar age. Our little patient has besides improved in health, size, and vigour; its appetite and digestion are good; and what has afforded us particular interest, not a single convulsion has occurred since the first operation.

"My friend Dr. Traill, who unites to very various scientific acquirements much skill in practical chemistry, examined the water discharged from the head at each operation, and found it at first to contain scarcely any trace of albumen; he considered it to possess more of the characters of simply diluted mucus. After the second and third operations, the presence of albumen was more sensible.

The medical treatment of the child was restricted to the preservation of the action of the bowels by small doses of hydrarg. cum creta*.

Liverpool, Nov. 27, 1817.

* Mercury with chalk.

Case of Congenital Hydrocephalus, in which the Operation of Puncturing was repeatedly performed. By James Sym, Kilmarnock.

"In April 1822, I was called to visit an infant, of whose case I received the following history:—The midwife had remarked at his birth, that his head was of an uncommonly diminutive size; and during the whole of his life he had been so fretful, that his mother was surprized he should continue to thrive, while he seemed to suffer almost constant uneasiness. He increased in bulk, however, and sucked with sufficient avidity, showing nothing peculiar in his appearance, and no symptoms of disease, till he was about six weeks of age. It was then observed that his head had become tumid at the fontanels, and he began to sleep worse than formerly, to take less nourishment, and to decline in his flesh. When I first saw him he was eleven weeks old, and I found his head exceedingly enlarged. Upon placing it in the direct rays of the sun, it was evidently diaphanous* down to the temporal muscles, and water might be detected by distinct fluctuation throughout every part of it. There was nothing unhealthy in the appearance of his eyes; and although it was impossible to ascertain the degree of vision enjoyed by so young an infant, still he must have possessed the use of that sense to a certain extent, as he was always most readily appeased during night by lighting a candle in the room in which he lay.

"I prescribed small blisters, and a gentle course of calomel, as much with the view of fulfilling the ordinary routine of practice, as from any feasible hopes of removing so large an accumulation of water by absorption. This course was persevered in for a fortnight, when the integuments covering the wide interstices between the bones became so tense and thin, that I apprehended sloughing. His pulse too had become extremely small and rapid, his cry feeble, his body emaciated, and he rejected the breast.

I now scratched an opening with a lancet in the posterior fontanel, and six ounces of salt-tasted serum flowed from it, leaving the head so flaccid that it was found dis-

* From the Greek words "through" and "to shine;" transparent.

ficult, by means of lint and a bandage, to approximate the bones to a globular form. The child did not appear to suffer any inconvenience from the sudden removal of the fluid. He revived after the operation, slept well the succeeding night, sucked more greedily next day than he had done for several weeks previously, and his pulse became both fuller and slower. It was not long, however, till the water had again perceptibly accumulated, and he began to manifest the same distressing symptoms which had existed before the operation. These were again alleviated by removing the water, which was now done by a small trocar and cannula; and in the course of three months, during which the child was under my care, this was repeated five times, and 36 ounces of water withdrawn. The relief afforded by the operation was so obvious, that I was generally urged by his parents to perform it earlier than I felt disposed to do. At length the water ceased to accumulate about a fortnight after the last tapping; and within a week of the child's death, so much of it had been absorbed, that the scalp fell in between the parietal bones, forming a deep furrow. The secretion of urine was very remarkably diminished during this stage of the disease. The child was six months old when he died.

"*Dissection.*—The dura mater adhered firmly to the bones of the cranium; and the thickened arachnoid* membrane formed a large sac, containing 2½ lb. of limpid serum, and partially divided into two chambers by the falx†. The cerebellum and pons varolii were of the natural size and appearance, as were also all the nerves which originate within the cranium; but in place of the cerebrum there was only a small, firm, flat mass, not larger than a garden bean, lying over the sella tunica. It was so much compressed, that it was quite impossible to recognize in it any parts corresponding to the structure of a healthy brain.

Kilmarnock, August 1824.

* See the description of the brain and its membranes, Plate X. This is the external lamina of the pia mater, so called from its resemblance to a cobweb.

† That which separates the hemispheres of the brain; from *falx*, a scythe.

Case of Hydrocephalus Chronicus, with some unusual Symptoms and Appearances on Dissection. By Charles Miller, Surgeon. Communicated by Dr. Robertson.

"This boy, when only eleven months old, was observed by his mother to require his head-dress to be enlarged every three or four weeks, the progressive increase of size continuing regularly until about two years before his death, when the head measured 31 inches in circumference. There was no farther increase afterwards. His general health, for many years, was good, and his growth natural, except the head. He was latterly emaciated—his features corresponded with the size of the cranium. For the last two years there had been an oozing of water from his nose, to the extent of one or two dram glassfuls daily. This water was clear, and of greater specific gravity than common water. On keeping, it became muddy. His memory was particularly correct, and his mental faculties unimpaired.

"*Dissection.* On the removal of the scull-cap, an immense rush of water took place, until a wash-hand basin was completely filled, and a pint and a half run over. The basin contained seven pints. A small quantity of pus was found in the posterior lobe of the cerebrum of the left side, and the anterior portion of the medulla spinalis was covered with a layer of purulent matter. The dura mater appeared as if torn in shreds, and that not during dissection, but from previous disease. It was quite separated from the interior of the scull, as far down as the circular incision is usually made, the bone being so far quite denuded, except the attachment along the longitudinal sinus, which was morbidly thickened. The convolutions of the brain were floating like loose intestine, and defied dissection. They were quite a gelatinous mass. The ventricles were like large pouches, and it was remarkable how very firm and cord-like the nerves felt amongst the general mass of devastation. The opening through which the water had distilled into the nostrils was a foramen, an inch above and to the right crista galli, having a direct communication with the nasal cavity. There was much bloody serum in the spinal canal. The boy was 16½ years old when he died.

"Mr. Miller* thinks this case offers proof that mind is much more independent of matter than is supposed by some. If Mr. Miller can show us a case where there is a manifestation of mind without any brain, we will acknowledge that mind is *quite independent* of matter; till then, we must continue to believe, that its manifestation is *entirely* dependant on matter, however bad that matter may appear on dissection. Every one has seen respiration carried on, and pretty well too, with half a lung. Here, Mr. Miller might say, is a proof that breathing is much more independent of the lungs than is supposed by some. But such argumentation is unworthy of notice."

SECTION XVI.

Treatment of Marasmus.

It is evident, from the description given of this disease, that the seat of it is in the viscera, and is a consequence of a continued irritation excited during the process of teething.

In madness, where there exists, in a similar manner, a continued irritability upon the constitution, we find almost invariably, the liver to be primarily disordered.

In pulmonary consumption, the effect is manifested, because it is a disease of unceasing excitement; here we find both the alvine and digestive functions materially deranged.

In habitual drunkards, the effect of irritability, from the over-stimulus of spirits, is seated in the stomach and bowels. Long residence in warm climates terminates in a similar result, from the over-exciting power of continued heat. Where irritability of long continuance, therefore, pervades the human constitution, the hepatic viscera is the first to evidence disorganization.

The liver may be considered the depot for that fluid which purifies the blood, and prepares it for the nourish-

* Observes the editor of the Medico-Chirurg. Rev. from which work this case is extracted.

ment of the body: its quantity and quality, therefore, may be deemed of the utmost importance to the preservation of health. It is quite an erroneous opinion, that our knowledge of the liver and its peculiar functions is the result of modern discovery. So far is the reverse of this true, that Hippocrates made the office of this gland the index by which he was guided in the treatment of all diseases. He knew the diseases of this important viscus by the eye, the countenance, the fæces, and by the urinal discharges, and he was seldom deceived in the judgment which he formed. As the diseases of the human body are accompanied by a diminished or increased degree of irritability, he found that the liver, in an equal ratio, was affected.

I remember, when the late Dr. Curry, of London, urged with much force and eloquence the truth of these conclusions, which he had derived from extensive practical experience, with what ridicule and contempt his assertions and opinions were met by his professional brethren. Notwithstanding, the intelligent Mr. Abernethy's whole system of management of the chylopœtic viscera is built on this foundation. It is now the established practice of the British medical-schools, and is bringing down upon it the contemptuous sarcasms of our Parisian brethren. M. Broussais declares, that the English think of nothing else but purgation and calomel. But the day, no doubt, is not far distant, when they will adopt the practice which they now condemn.

While the hepatic derangements were well known to the ancients, so likewise was their remedy; and the use of calomel in large doses, so much practised at this period in India, was well known to Michaelis Alberti, who describes this remedy in all its uses from the Arabian physicians down to Paracelsus, thence to his own time, 1745. Helwichius gave calomel in doses of five scruples to two patients; to a third he gave 72 grains. Neuterus gave calomel, at first, in the dose of 15 grains; second dose, a scruple; third, half a drachm; fourth, a drachm; while Medelius is found to recommend calomel in doses of a scruple as the standard. This will con-

vince my readers, that whatever opinion I may advance respecting the liver and the use of calomel, we have long established authority for it.

I do not mean to urge, however, that the seat of marasmus is wholly in the liver. On the contrary, it will be perceived by my history of it, that the whole visceral functions partake of the disordered state. Plate XII. shews the connection between the vessels of the liver and bowels, and plainly delineates how much the mesenteric glands must sympathize with the hepatic disorganization, and therefore our treatment must be directed accordingly. I am in the habit of prescribing two grains of calomel every evening, in three of white sugar, and the mixture No. 2. of Purgatives, Section V. every morning, so as to produce one or two copious evacuations daily. But I must let my reader know my object for so doing, that I may remove all doubts upon the subject, for the world is sceptical. As proof of this in the profession of medicine, I remember hearing Sir John Malcolm relate an anecdote of Scotch students in Edinburgh, that whenever they were told any thing remarkable, their reply invariably followed, "Sir, I doubt it." That my fair readers may not indulge a similar scepticism, I will explain by observing, that the liver is in a torpid state, and indeed the secretory and excretory apparatus is in a state of paralysis.

If a certain proportion of spirituous fluid be put into the stomach, it excites to energy and liveliness; but the result of this is, that when the first effects have passed away, there is a greater listlessness than when the spirits were taken; and if this over-excitement is continued, exhaustion is the consequence. If I exert all my strength for too long a time, I exhaust it, and become helpless. The liver, in marasmus, is exactly in this state. The continued irritability, excited in the constitution by difficult dentition, exhausts the chylopœtic apparatus, and the child wastes away; and what is necessary to be done is, to recover the alimentary tone and functions. The memorable campaign of Bonaparte taught a valuable lesson in medical tactics; or, in other words, it

taught how to lessen the irritability of cold, or how to restore that state which had been lost by exhaustion resulting from irritability. Our feelings would naturally lead us, when freezing by cold, to hasten to a fire for warmth, and to obtain a restoration of our natural temperature. This, however, would be, in the highest degree, injudicious; for immediate warmth would induce mortification; and instead of restoring, would, by inducing violent inflammation, excite the most insupportable pain and agony. In this instance, the dictates of our feelings would lead us astray; while experience, on the contrary, would lead us right, by teaching us rather to roll in snow, than wrap ourselves in blankets, because it is necessary to obtain the equilibrium of heat, which has been lost, by degrees, and not by extremes. So, in wasting away, the natural suggestion would be to have recourse to soups and other nutritious food, and to wine, beer, &c. Such a course would be a mad one, for it would certainly kill. Experience teaches us to restore the exhausted functions to a healthy state by degrees, not by extremes. Our first attempt must be to restore to an equilibrium of action the lost nutrimental powers by gradation. I have already mentioned, that calomel, in large doses, is sedative; in small doses, stimulant. It is on this principle, I recommend small doses, and the gentle operation of the purgative mixture, as being admirably adapted to make up for the deficiency of the alkaline and laxative properties of biliary fluid. This course must be continued for three weeks or a month.

It is not unusual, that the liver and bowels, together with the arterial system, especially the small mesenteric vessels, are in such a torpid state, that external excitement becomes indispensable, in which case friction is to be used. We must rub in, therefore, night and morning, and twenty minutes at a time, along the abdominal region, one drachm of mercurial ointment. By these means we shall bring the whole glandular system, especially the liver, into healthy action. The infant, however, will still continue weak; but the system is prepared for another treatment, viz. that of astringing and strengthen-

ing. The mercurial course is now to be discontinued, and five grains of carbonate of iron are to be given, three times a day:—during which course the bowels are to be kept regular by the purgative mixture; and should the liver continue much enlarged, the friction must likewise be continued until it is reduced. It is proper to observe, that the carbonate of iron turns the dejections to the colour of ink. I mention this fact, because mothers are apt to be alarmed at this change. The adoption of this latter remedy, at the period here mentioned, acts like a charm. The infant's appetite increases; the face begins to fill out; the hard swelled belly sinks into its natural pliable form; muscle begins to form; from being irritable and peevish, the little patient becomes cheerful, intelligent, and active. Now there is no medicine less likely to prove specific in all diseases than carbonate of iron; and I warn mothers not to give this remedy on every occasion, when a child's appetite lags; it is only to be administered in cases of great laxity and depletion, from prolonged sufferings in sickness.

While such are the remedies deemed essential to the case of marasmus, it requires a very particular adherence to a mode of diet, without which it avails nothing.

It will be evident, that the stomach and bowels are in an exceedingly weak state, and incapable of bearing much. Middle diet, therefore, in the first stage is indicated. As the child's stomach and bowels, however, acquire strength during the course of carbonate of iron, we may gradually approach to full diet.

During this malady, the infant is fretful and peevish from disease. Nurses must be warned not to lose their tempers with the poor little sufferers; they are to be indulged in all their little whims, however unpleasant, provided they do not require the indulgence of those things which are improper. Nothing is so comforting to our poor little patients as gently rubbing and pressing their limbs with the hand, while they lie in their beds. It removes the irritability under which they labour consederably, and aids a languid circulation. A swing, likewise, affords a little recreation, and when it is gentle is

beneficial. Now is the period to indulge a child with toys and amusements, as all things which occupy the mind tend to lessen the pain of the body. Exercise, morning and evening. The morning air, in India, is a good tonic.

SECTION XVII.

Treatment of the Liver.

(See Part II. Section XI.)

It is evident, from the description given of this disease, that one of the principal causes of it is irritability, however excited. In adults it may arise from the over-stimulus of spirituous liquors; from over-excitement on exposure to the sun; or finally from constitutional irritability, or from any other cause which may constitute morbid irritation: hence the source of biliary obstruction, which is ordinarily, by all classes in India, denominated *liver*.

What establishes this complaint, according to my experience, which has been extensive, is a determination and accumulation in the glandular system, and a deficiency of bile and other juices in the alimentary canal. According to the quantity of this accumulation, is the sensation of oppression, and fulness about the breast, and right and left sides; and as there is an absence of bile, to act as the agent to purge away the contents of the bowels, they are evacuated in knotty lumps streaked with mucus; and during the alvine discharge much griping pain is felt about the lower part of the abdomen and small of the back. The glandular system being the seat of the disease, the father of the glands, the liver, is the first to evidence a derangement in the functions; and secretions and excretions being his grand functionaries, we perceive, because the head of the government of our nutrient state is affected, that the whole community is summoned to his assistance. So that all the various offices of secretion are left without the necessary powers to work the complicated machinery. Hence we witness thirst

Fig. 1.

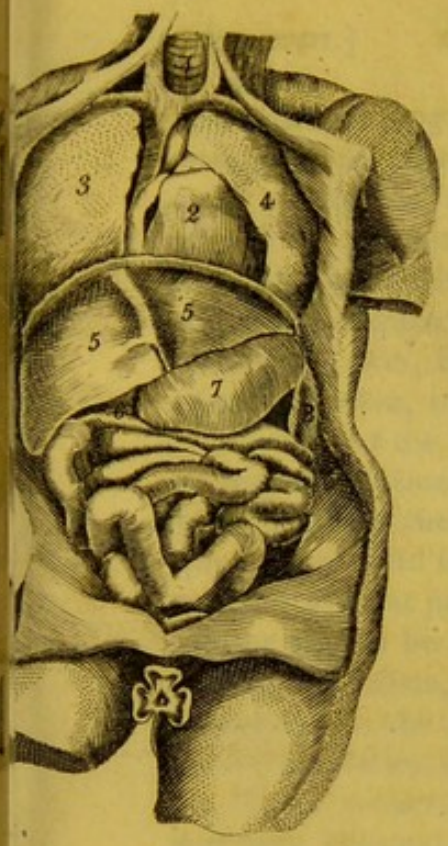


Fig. 2.

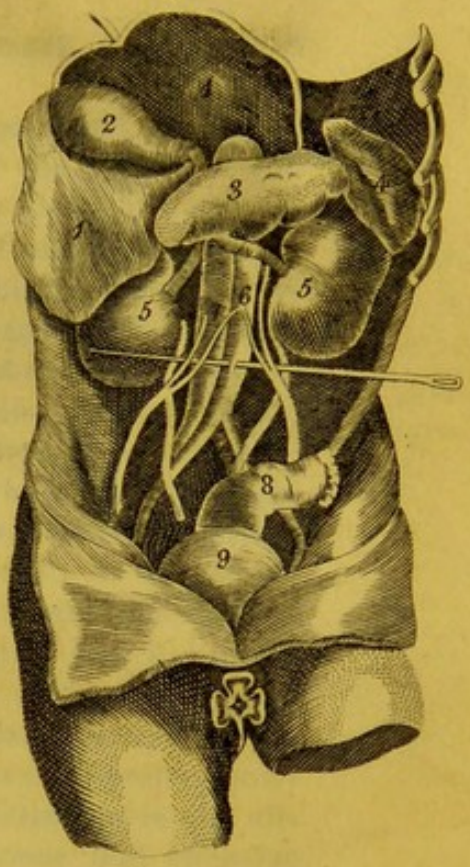


Fig. 3.

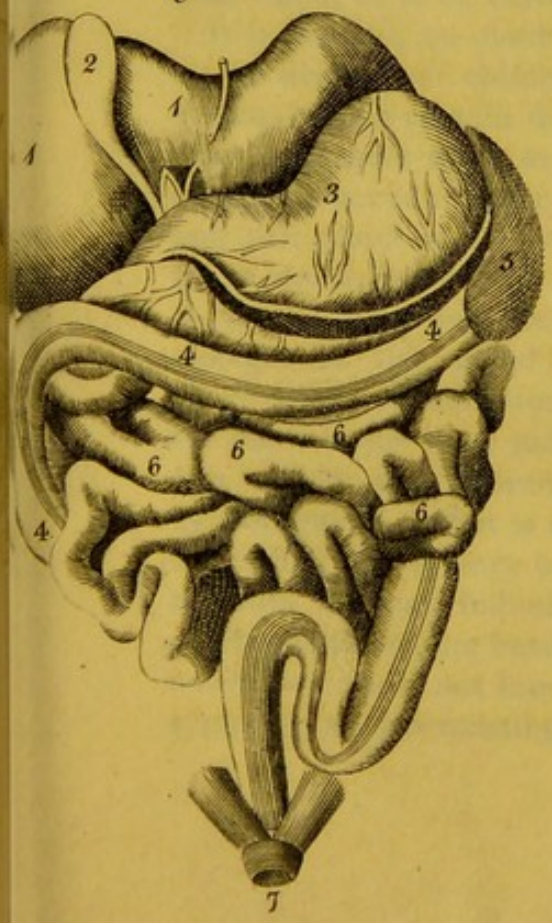


Fig. 1.

1 ..... Windpipe
2 ..... The Heart
3 ..... Right Lung
4 ..... Left Lung
5.5 ..... The Liver
6 ..... Gall bladder
7 ..... The Stomach
8 ..... Spleen

Fig. 2.

1.1 ..... Under Side of the Liver
2 ..... Gall Bladder
3 ..... Pancreas
4 ..... Spleen
5.5 ..... Kidneys
6 ..... The Great Artery called the Aorta
7 ..... The Great vein called Venacava
8 ..... Large intestine
9 ..... Bladder

Fig 3.

1.1 ..... Under Side of the two tubes of the Liver
2 ..... Gall bladder
3 ..... Stomach
4.4.4 ..... Large intestine called the Colon
5 ..... Spleen
6.6.6.6. Bowels
7 ..... Anus

and parched tongue, on account of the flight of saliva; enlargement, tension, and weight over the region of the liver and breast, attended with scanty alvine discharges, owing to the cessation of a supply of biliary fluid; loss of appetite, and irritability of the stomach from the absence of the gastric juice; partial collapse of the capillaries of the skin, by the departure of the usual exudation of perspiration, together with scanty discharges of urine, on account of the shutting up of the office of the kidneys; so that revolution takes place in the whole corporeal system. During the period of healthy secretion, a certain quantity of fluid is secreted and excreted. It is necessary, that a great part of this secreted and excrementitious matter should be carried off by the skin; but if morbid irritability exists, the glands become over-excited, and exhaustion is the result; so that the glandular system has an accumulation from inability or want of expelling power. These accumulations, from long residence in the alimentary channel, deteriorate into green and offensive fœces, and in this state are, with much difficulty, discharged in stool, and are attended with such a cadaverous smell, as to be extremely offensive.

It is evident, on observing the various local affections in the diseases of children in India, that the glandular system is, in a certain decree, the seat of all of them. The liver undergoes more morbid changes in them, than in adults, on account of the extreme delicacy of their frame; and this gland is in proportion much larger, and its office much greater in infants than in adults, so that it is not unreasonable to suppose, that the morbid changes in this gland in children become increased. They are more accustomed to irritability than adults; for there is no state more irritable than that of teething. They are, therefore, not susceptible of ordinary excitement, and it is most difficult to excite in them salivation. They have been known to take powerful stimulants without inducing inebriety. In noticing the disproportion of the head and liver between children and adults, we must not lose sight of the fact, that there is a sympathy always existing between the liver and the brain,

and that the distribution of the circulating fluids to these organs is greater in children than in adults; consequently, besides unceasing irritation, they are subject to greater derangement, and to more frequent disease. Hence in them the continued disordered state of the bowels, eruptive and febrile diseases, during difficult dentition, and finally enlarged liver and cerebral irritations; but above all, the accumulation or congestion in the pancreas, liver, kidneys, and cutaneous surface. What then is indicated? That which will promote glandular excretion and secretion. This effect will not be produced by antimonials, purgatives of rhubarb or magnesia, or warm bath. What then are we to do? We are to adopt those medicines which affect the glands, and these are calomel, turpentine, copaiba, and nitric acid; but the principal of these is calomel, because of its immediate action exciting the glands. This is known by its producing ptyalism, or salivation. But it was said, just now, that it is difficult to produce salivation in a child, in consequence of the exhausted state which is the result of continued irritability. True; there are not many instances on record of salivation being produced in infants; but, notwithstanding, the mercury removes the congestion of the glands, and having taken effect, it causes secretion in the parotids, though not to the extent of ptyalism. The thirst and parched tongue disappear; the kidneys are moved by a constant flow of thick, turbid urine; the capillaries are unlocked by a constant exudation from the skin, and the liver is once more moved; the *po de chambre* being filled with the most putrid accumulations conceivable. This process continues until the whole glandular system is relieved. This is evidenced by all the discharges becoming healthy, especially the alvine. But it has been said, that calomel will sometimes give a green and putrid-coloured tinge to alvine dejections; how, therefore, can any healthy change take place in the colour of the dejections, during the operation of that medicine? True it is, that I have decidedly seen green evacuations after the operation of calomel; and parents may be much perplexed, and find it difficult to know when to discontinue the use of that medicine, since in

another part of this work, I have stated, that the change of green fœtid dejections to a healthy colour, is a sign that calomel has performed its office, in cleaning the bowels from their offensive colluvies, and that it was the *modus operandi* of calomel to procure healthy dejections. Here it is again said, that calomel changes the colour of dejections to a morbid green. The cause of this is, there exist considerable disease and acid in the bowels, which the calomel brings away. No other medicines have sufficient power or force to do so. I have discontinued calomel, and given rhubarb in its place; and instead of green dejections, they have been the colour of that medicine. I have at other times given mixture of No. 2. Purgatives, Section V. and the alvine discharges have assumed the colour of that mixture, while salts brought away only water. Another cause may be from over-purgation. Mr. Abernethy states, that "in cases of disease, coloured secretions may take place from the bowels." "I," says Mr. A., "have known instances in which a fluid, like coffee grounds in colour and consistence, was emitted, and a similar matter, of darker colour and offensive smell, was discharged in great quantities *per anum*, and I have seen green bile mixed with these discharges. I have examined the bodies of persons who died of such attacks, and have found the lining of the alimentary canal highly inflamed, and apparently tending to mortification, throughout its whole extent, without there being any disease of the liver. I am, therefore, fully aware, that the fœces may be coloured by diseased secretions from the bowels themselves." This is high authority for my readers, and assists them to comprehend that over-excitation causes inflammatory disease along the course of the intestines, by which the mucus, lining them, becomes green and fœtid. This irritation may be produced from too long a course of purgation; therefore, that which was intended as a remedy may probably become the cause of disease. To ascertain when this effect arises from over-purgation, the operation of medicine must be suspended for a day or two, in chronic diseases. I am satisfied, if much acid exists in the bowels and stomach, that the alvine discharge,

after the operation of calomel, will always be green and slimy. Having cleared away these points, our treatment is this. Give four grains of calomel in four of sugar thrice a day, and rub into the abdomen one drachm of mercurial ointment, night and morning, and produce one or two copious evacuations with castor oil, or mixture 2. of Purgatives, Section V. In event of much irritability, give the following.

Powder of opium, two grains;
Powder of ipecacuanha, 10 grains;
Columbo powder, 30 grains;
Calomel, one drachm.

Mix, and divide into 20 powders; one to be given three times a day. If the liver is much enlarged, a blister must be applied, and kept open six days. The child's diet should consist of liquid jelly, barley beverage, &c.

When this course has been continued a month or three weeks, and the disease be removed, which we shall know by the copious alvine discharges, free perspiring skin, clear and healthy tongue, moist and warm excretions, returning desire for food, healthy dejections, and cheerful enquiring mind, we may then give one grain and a half of sulphate of quinine three times a day, and gradually increase to full diet, to which may be added, a claret glass of Hodgson's pale ale daily; and the sooner the child is sent to Europe the better.

SECTION XVIII.

Treatment of Yellow Jaundice.

(See Part II. Section XII.)

In this disease, the *vis medicatrix naturæ* prevents obstruction in the liver to any great degree, by passing the bile into the blood. By this means a superabundance of biliary fluid does not remain to cause any great disease in the liver, nor to prevent the excretion or secretion of bile, although at the same time there is a deficiency of this fluid in the intestinal canal; on which account white stools

are passed, and with great difficulty; accumulation of air fills the large bowels, and the abdomen is often tense and tumefied. The admixture of food and bile not taking place, loss of appetite ensues, and the food is passed undigested. The immediate cause of this disease is debility in the secretory functions of the liver, or matter forming from over-irritability, terminating in concretions, which often fill the gall-bladder; and indeed, it is sometimes owing to these concretions forming in the hepatic ducts, by which the flow of bile is impeded in its course into the abdomen.

In his disease the bile itself is not diseased, nor always deficient in secretion; but instead of being carried into the alimentary canal, is taken up by the lymphatics of the gall-bladder, and biliary ducts, and carried into the arterial circulation. Consequently, as before mentioned, there is neither as an invariable consequence a superabundance nor deficiency of biliary fluid: but a deficiency of it is experienced only in the alimentary canal. This disease is not, therefore, suddenly dangerous; but the chylefactive process being partly lost, the patient suffers a lingering illness, and unless the cause be removed, existence is extinguished. In infancy, however, this disease generally arises from debility in the secretory apparatus of the liver, or in other words, torpid action in that gland; and almost every child who has suffered difficult dentition is more or less afflicted with it. Our treatment is, therefore, to strengthen and excite the action of the digestive and alimentary organs; to stimulate the stomach and bowels, and draw the bile into its proper channel; which, when once effected, the current once more flows in its proper channel, and the disease is removed. Too much calomel and mercurials are injurious here; but the powders Sect. VII. No. 3. of Corroborants are to be taken daily for a fortnight, and after that period, I have no doubt all will go on well. Care is to be observed, that should the bowels be sluggish in operating, one or two evacuations daily may be promoted by the mixture 2. of Purgatives Sect. V. On the lapse of the fortnight, we are to administer No. 1. Corroborants to the end of the month. If the bowels are very hard, a little rubbing with the hand will create secretory action. It is

proper to mention, that some children are born with this complaint, which may be known from the yellowness of their eyes and nails. This sometimes continues for months after birth. It arises from a little viscid matter obstructing the gall ducts. Ten drops of antimonial wine, to produce sickness, generally removes the obstruction. In order to avoid falling into an error, however, it is necessary to observe, that all children are to a certain degree yellow for the first month after their birth.

SECTION XIX.

Treatment of enlarged Spleen.

(See Part II. Section XIII.)

My description of this complaint is so similar to that of marasmus, that were the symptoms of the latter to accompany the enlargement of the spleen, the treatment must be pursued, which is laid down for marasmus. But, on the contrary, where there is simply enlargement of the spleen, attended with yellow jaundice, the following will be found a very successful remedy. Mercurial medicines are not much required in these diseases ; indeed, they are often injurious.

Aloes Socc. two ounces ;
Garlic, ditto ditto ;
Brandy, ditto ditto ;
Vinegar, 1 pint and 12 ounces.
To be mixed, and exposed to the sun in a bottle for four or five days. A teaspoon-full, or as much as will keep the bowels regular, twice a day. This remedy has been very efficacious.

The article among these ingredients, which may be deemed the remedy, is garlic. It was, among the ancients, esteemed a most valuable medicine ; but like many others, which are called simples, it is excluded from the learned pages of modern Pharmacopœias. Garlic promotes powerful and diffusible stimulus, and is highly useful in diseases of languid circulation, and interrupted secretion. Hence its use in the disease in question. As a remedy, it has been celebrated in typhus fever as well as in inter-

mittents, and has effected cures where bark has failed. Sydenham relates, that he knew a dropsy to have been cured by the use of garlic alone. Bosenstein found it efficacious in destroying worms in children. Sydenham assures us, that among all the substances which occasion a derivation from the head, none operates more powerfully than garlic applied to the soles of the feet. I mention these facts, to prevent this medicine from being treated with contempt. The reason for the admixture of vinegar is, that its virtues are nearly destroyed by decoction; and according to Neumann's Analysis, two thirds are lost by exsiccation; but its peculiar virtues are extracted and preserved by vinegar. Besides, acids internally have been found peculiarly useful in reducing spleen. The aloes is for the purpose of co-operating on the bowels, and the brandy is to add to the diffusible stimulus.

SECTION XX.

Treatment of Acid in the Stomach.

(See Part II. Section XIV.)

This disease is caused by morbid accumulation of acid. A certain proportion of acid in the stomach, is essential to assimilation in the digestive process. Dr. Cullen allows, that all vegetable aliment first turns acid in the stomach; for every stomach, human or brute, is always, on examination, found to have an acid present in it. Therefore a proper degree of ascescency contributes to health. A morbid state, is when the aliment enters into a high vinous fermentation, with a copious generation of fixed air, of the same nature as that produced in the ordinary vinous process: it then becomes a disease, and has the power of destroying the mobility and contractility of the moving fibres, and even the tone of the stomach itself, producing flatulency, spasm, stupor, lethargy, and death. While the above is the opinion of Cullen, Sir John Pringle has sufficiently proved that the admixture of animal fluids cannot hinder the acetous process, but on the con-

trary, that in certain proportions, it promotes it. But animal food is not so liable to fermentation as vegetable. It is on this account, that children whose food is principally of the vegetable kind, generate so much acid in the stomach. Indeed, there are many experienced practitioners, who assert that acid is the cause of all diseases in infancy. We shall know when this cause is present, by the bowels becoming costive, and the belly swelled and hard; by eructations of acid air, with white curdled lumps, being passed in the stools, and by the infant evidencing much griping pain by a drawing up the legs, and continual irritation and crying. In this state we must administer, occasionally, mixture, Sect. V. No. 6. I say occasionally, because it would be detrimental to give it daily or too often, as is the custom with some parents, who are for ever giving magnesia; the consequence of which is, that it destroys that acid which is essential to the health, to secretion, and nutrition, and lays a foundation for concretions, or otherwise, stone in the bladder; several of which have lately been examined and analyzed by the late eminent Dr. Marcet, which were taken from the bladder, and found to consist entirely of magnesia. The persons from whom they were taken had been in the habit of constantly using that medicine. If magnesia be given when required, it is invaluable; but otherwise highly injurious, and instead of removing, will produce disease.

It is a great error to be biassed to any favourite system, especially in prescribing. There are persons, however, who would not relinquish some favourite medicine for the world; and such persons believe all others fall into the same injudicious system. Several years ago, when those alarming epidemics, cholera and remittent fever, prevailed, I was in the habit of giving twenty grains of calomel five times a day, to a patient, and obtained the name of the calomel doctor; and many of my friends of the present day think that I must as a matter of course do the same, and have expressed their desire that my doses may not be too large; supposing that I always had the same powerful enemy to subdue, or rather, concluding that I use the same powerful

auxiliaries now, as I did then. On the contrary, the enemy is not now malignant, but merely discontented, and quite of a different character: the same treatment now would be dangerous to the constitution, while then it was often certain restoration of peace and order. Indeed the modification of seasons, years, and diseases is such, that science and observation must be constantly on the alert, to modify at the same time the treatment of disease; and this is a reason, why specifics in medicine for the treatment of disease can never exist, and why magnesia should be used with proper moderation and judgment.

SECTION XXI.

Treatment of Croup.

(See Part II. Section XV.)

Many professional men consider this a spasmodic inflammatory disease, and treat it accordingly, viz. by bleeding, blistering, calomel, emetics, seneca root, and various other remedies. The spasmodic inflammatory affection will be treated of, Section XXX. I shall merely here advert to what I term croup, that is, accumulations of curdy matter and mucus, as well as spasmodic affection of the windpipe, from excess of acid in the stomach. We must, on the instant, give a child one tea spoonful of antimonial wine, and place it in a warm bath. Should the wine fail to operate in ten minutes, half a spoonful is to be repeated, and so on after the same intervals, until vomiting be produced; at the same time aiding the operation, by giving as much warm water as the child can drink. In this case, it is often very difficult to excite vomiting in children. An instance is mentioned by Dr. Underwood, where a child commenced taking one grain of antimonial powder, which was several times repeated; after this, half a drachm was given, with two teaspoonfuls of antimonial wine; ten grains of powder of ipecacuanha was next administered; again twenty grains, to which was added one of tartar emetic. These failing,

ten grains of tartar emetic were administered; subsequently twenty grains of white vitriol; and all without effect; showing that the violence of the spasms was greater than that of the most powerful stimulants. In these cases, our object must first be to allay the spasm, which we are generally able to do, by giving six drops of laudanum every two hours, until they remit. Having subdued the nervous irritability, we must again have recourse to the antimonial wine, which will doubtless act, and remove the viscid matter mentioned in the description of this complaint. The stomach being thus relieved, we must administer mixture Section V. No. 6. during six days successively. Should this mixture fail in opening the bowels, the mixture 2. of Purgatives, Sect. V. will be indicated.

Section XXII.

Treatment of the Thrush.

(See Part II. Section XVI.)

This disease evidently originates in a change of superabundant acid in the stomach to an accumulation from viscid, offensive sordes, and an acrimonious matter, all along the coats of the intestines. This must first be removed, and then we are to prevent another return of acetous derangement to the bowels and stomach. Give mixture No. 2. of Purgatives, Section V. during three days, to produce two or three dejections daily; and the nitrated mercurial ointment is to be applied three times a day to the eruption as it appears at the anus, and the following to the eruption in the mouth, night and morning, by putting a little on the finger, and gently rubbing the parts where the eruption prevails.

Borax, one drachm;
Honey, one ounce.
Mix well together.

The above treatment will shortly remove the disease; but as there is evidently a disposition in the child to ge-

nerate a morbid increase of acid, the mixture No. 6. Section V. should be given during six days, and also an occasional additional dose of mixture No. 2. of Purgatives, Section V. should the child require an aperient.

SECTION XXIII.

Treatment of Erysipelas.

(See Part II. Section XVII.)

This disease is the effect of acid fortunately expelling itself by the excretions, and thus exciting an irritation on the skin, producing, according to the medical term, *erythema*, which signifies *redness*. Inflammation much resembles erythema. But indeed, so opposite are the two with respect to treatment, that if erythema were managed in the same manner as inflammation, death would probably be inevitable. The feeling and symptoms of the former affection, viz. a burning of the skin, &c. seem to indicate bleeding and depletion; but experience proves that a very different mode of medical operation must be adopted. I consider this an idiopathic affection. There are inflammatory affections which are attended with erysipelatous eruption. We daily observe this eruption around a boil, or after the action of a blister, and indeed where there is much irritability. When, therefore, erysipelas is a symptom attending inflammation, here our attention is directed from the symptom to the disease, and the potent measures for depletion are indicated. Many persons, however, having considered the symptom the disease, have treated it by bleeding, and believe that this is the only cure for erysipelas. This is an error in judgment. Erythema, therefore, is a term essential here, to distinguish between symptoms which, being in some respects similar to the eye, and in irritability, lead a tyro to consider the affections relatively the same. This shows that *terms* are important in some cases, to direct us to proper treatment: *analogy* would lead us astray.

My readers will perceive, that the affection now under consideration is not to be treated as inflammatory, but as one arising from a superabundance of acid in the stomach. Our first object, therefore, must be to purge away the feculent sordes which have accumulated along the alimentary canal. To effect this, the most successful remedy is the mixture Section V. No. 2. of Purgatives. This must be administered daily, so as to produce not more than one or two copious alvine dejections, during the course of ten days; when mixture Section V. No. 6. must be given during six more. If restlessness or dry skin intervenes, the mixture is indicated No. 8, Section V. Finally, the following will complete the cure:

Bark powder, half an ounce;
Tinct. cardamoms, one drachm;
Tinct. bark, four drachms;
Water, eight ounces.

Mix; shake well together when used, and take one tea spoonful three times a day.

SECTION XXIV.

Treatment of Scarlet Fever.

(See Part II. Section XVIII.)

As this disease arises from the same cause as the preceding, the treatment must be much the same. In this complaint, however, a violent fever and sore throat accompanies the erythema on the skin. We must, therefore, on the accession of the fever, administer calomel five grains, every night and morning, and give the mixture Section V. No. 2. of Purgatives every morning, with a view to cleanse the bowels, which must be continued six days. It will be found that there exist a very hot and dry skin, parched tongue, and scanty discharges of urine, restlessness, and want of sleep. The fever mixture Section V. No. 8. will remove all these symptoms, and until reduced, must always be administered. Mixture No. 6. Section V. is to be given every other evening. When the purgative medicine will not act, either from irritability of

stomach or obstinate constipation, injections are invariably to be used. Having pursued this course four days, the fever will probably be removed; and when the alimentary canal may be deemed freed from all noxious matter, the bark mixture, No. 2. of Corroborants, mentioned Section VII. may be administered.

SECTION XXV.

Treatment of the Measles.

(See Part II. Section XIX.)

Acid is the evil to be contended with in this complaint. The deficiency of biliary secretion is particularly marked, and the effect is, accumulation in the bowels and stomach of much acrid and offensive matter; this must be dislodged, before we can have the least hope of checking the disease; indeed, when this is done, the complaint is ordinarily removed.

We must begin, therefore, by giving three grains of calomel every night and morning for four evenings, which will excite biliary secretion. Every morning the mixture Section V. No. 2. of Purgatives is to be administered, to effect two or three copious motions of the bowels. The fever mixture will be found an admirable remedy in this disease, removing a dry hot skin, and allaying irritability, as well as promoting sleep.

The thirst is often very great: the saline julap, Section V. No. 9. ordinarily relieves it. After the mealy desquamation takes place, the foregoing course is to be discontinued, and the bark mixture, Section VII. No. 2. of Corroborants is to be given for four or five days, which will complete the cure. The mixture No. 6. Section V. will occasionally be indicated.

SECTION XXVI.

Treatment of Small Pox.

(See Part II. Section XX.)

Here, again, acid is the great adversary to be encountered. Our attention, also, must be directed to the liver, as I suspect there is, under this disease, a greater deficiency of bile in India than in Europe; consequently there is a great collection of offensive matter in the bowels, while all the glandular system, in a certain degree, partakes of congestion, or, in other words, the whole visceral functions labour under accumulation. We must, therefore, commence our treatment with one dose of calomel, combined with antimonial powders. Let three grains of each be given, the instant the disease appears; and in six hours after, we must administer mixture Section V. No. 2. of Purgatives, to cleanse the bowels during the day. When this is effected, fever mixture Section V. No. 8. is to be taken, to guard against accession of fever and restlessness, for the first three days. Mixture Section V. No. 2. of Purgatives must be given occasionally, to produce two or three evacuations daily. Should the bowels prove obstinate, which is often the case, we have a remedy in injections. A warm bath, in a warm room, to prevent any check, will be found beneficial, in keeping the eruption clean, and in preserving external cleanliness, which in this disease is highly important. To remove thirst, the mouth may be often washed with vinegar and water. The room in which the patient lies, should be airy and open. The saline julap is often beneficial to allay thirst in this complaint, and may be occasionally given. A gargle to the throat is highly advantageous in adults, but of course these local remedies cannot be used with infants of this nature. The diet must be middle. After the fifth day, the bark mixture Section VII. No. 2. of Corroborants is to be used.

Section XXVII.

Treatment of Intermitting Fever.

(See Part II. Section XXI.)

As this is another disease, the proximate cause of which is acid, we find the same deficiency of biliary secretion, and the same collection of offensive colluvies in the intestines. It is completely under the influence of medicine, if early attended to; if not, the disease degenerates into remittent or continued fever, and becomes dangerous.

The treatment is as follows. On the instant of the attack give five grains of calomel*, and twelve hours after, the mixture Section V. No. 2. of Purgatives, until the bowels be well opened. Fifteen hours subsequent to the accession, one grain of the sulphate of quinine is to be given in two of sugar every four hours, for three days, when no doubt the disease will be removed. But in event of a return of fever, we must commence our operations again by administering the calomel, and following it up with the purging mixture; upon which the quinine; but unless the bowels are previously well cleared, the quinine will have no effect. It will be found that there is great similarity in the treatment of all the preceding diseases; but as they all come and prevail under the same proximate cause, it follows of course, that the treatment cannot vary. Mixture No. 6. Section V. ought to be given occasionally after the fever has been removed, to prevent a return. Middle diet is the best, after the first day.

* No doubt my readers have been frequently surprised that my remedy for removing this acid should be calomel; but they must remember that the proximate cause is deficiency of bile: with this, therefore, is superabundancy of acid. To promote secretion of bile, and remove the proximate cause, the only remedy is calomel. When there is a proper quantum of bile, there will never be excess of acid.

SECTION XXVIII.

Treatment of Ophthalmia.

(See Part II. Section XXIII.)

The treatment of inflammation is the same in almost all affections of a local nature. Depletion, refrigerants, cataplasm, and purging, are the principal outlines of the treatment. My patients will, therefore, perceive the reason of my division of diseases, in their history, into three proximate causes, viz. checks of perspiration, acidity, and local checks of perspiration. It is to simplify, as much as possible, the method of treatment; which, it will no doubt be conceded by my fair friends, I have done, if after actual experience, success be realized.

In the case of ophthalmia, our first object is to remove the blood accumulated in the small vessels of the eye: to effect this, our attention is solely directed to the adoption of a method, as in cases of inflammation in other parts of the body. Every artery of the human body communicates with each other, so that if one has a current flowing in it, the whole have. To draw blood, however, from these reticular portions, (a term derived from *rete*, a net, because those vessels are interwoven like a net: in the eye, as in the brain, these vessels are actually interwoven into as minute net-work as the cobweb,) will often be attended with difficulty, especially where congestion has already taken place. But to explain:—If I draw blood from a blood-vessel in the foot, an increased action or circulation is instantly produced in this net-work, as in every other artery of the body, (provided there is no congestion.) It may be readily supposed, however, that according to the calibre of the artery, so is the freeness of the blood in circulation: on this account there is a much less power in these fine reticular portions, to repel congestion, or join the general current of determination. Thus accumulations in any part can be reduced by opening an artery in any part of the body. But where congestion has taken place in any one of the reticular portions, such as that of the fine membrane of

the eye, it will be difficult to produce a current or circulation of blood through it; so that where an alternative or cure for inflammation at other parts exists, by drawing the blood from them, does not apply to arterial congestion in the fine reticular vessels of the eye; consequently, bleeding is not always efficacious in curing ophthalmia, nor even in affording relief. This opinion I have derived from my own experience in inflammatory affections of the eye. I shall here instance a few cases, and the treatment of them.

I was called upon to attend a son of Major McQ. aged eighteen months. I found him afflicted with ophthalmia in both eyes, of which the inflammation was very great. The child was exceedingly restless, and sympathetic febrile accessions exaggerated greatly the primary disease. I directed a wash of sugar of lead, dissolved in water, for the eyes, and leeches to be immediately applied to the temples; a dose of calomel to be given in the evening, and castor oil on the following morning. It was found, however, to be impracticable to apply the former of these remedies; the irritation and pain being so great, that the approximation of the nurse's hands caused great distress: but as local application appeared indispensable to prevent total blindness, that of a bread and water poultice suggested itself as an alternative the most practicable. This was applied during the whole of the day and night. Almost instant relief was the consequence. The febrile heat ceased, and sleep and tranquillity ensued. In five days the patient was well; a delicate blush only remaining on the membranæ conjunctiva for a few days after. Many days had not elapsed before a sister of the above-mentioned child, aged five years, was attacked in a similar manner. The same remedy was applied, with one dose of castor oil, and with equal success, in the same number of days. Subsequent to this event, another sister, aged six years, was affected in both eyes; as well as the father of the children, in whom, however, one eye was alone affected. The same course of treatment was had recourse to. The former perfectly recovered in five days; but the latter, having imprudently removed the

poultice from the eye, the inflammation returned to an alarming degree, and the other eye became similarly affected. Nothing, however, but poultices were applied, with occasional doses of Cheltenham salts, and abstinence from wine and stimulating food was strictly observed. A cure was completed in eight days.

I must here observe, that an appearance of inflammation may occur in the eye, without that affection being actually present; and it is not unusual to perceive the eyes to be exceedingly red, while they are entirely free from pain. This is seen daily in some persons, the vessels of whose eyes are always filled with red globules, but who are quite free from inflammation of the eye. It appears to me, that this is owing to debility in the delicate and minute vessels in the membrana conjunctiva, which, in health, is of a peculiarly fine texture, admitting only the lymphatic parts of the blood, and resisting the red globules; but in case of debility in the vascular texture of the coats, the latter obtain admission, and there remain without resistance, and consequently without pain. This might have been the case with the children above alluded to, who could not describe the symptoms, and the remedial effects of cataplasm would not have been substantiated, had not the disease attacked the parent also, from whose description I ascertained the attack to be highly inflammatory. The pain, according to this gentleman's description, was almost intolerable, affecting the whole head; the globe of the eye seemed like a dead weight, with deep beatings or violent pulsations through it. During the *acme* of the complaint, a film appeared between the eye and the object, which disappeared with the resolution of the inflammatory diathesis, or rather when a mucous discharge exuded from the glands and membranes. A considerable discharge took place with the latter effect; the eyelids were completely glued together, and required bathing in warm water before they could be separated, during the period the children were affected. The ease and comfort afforded by the poultices were so great, as to induce them to solicit their repetition with much earnestness.

The cause of this violent pain in inflammatory diseases of the eye, is from the optic nerve being principally affected: the course of the artery being the same with that nerve through the centre to the retina, is a reason of the great arterial excitement in the eye, and of those deep and painful pulsations. The light being completely excluded by the poultice, one great cause of excitement is thereby removed from the nerve; and the emollient, appeasing effect of the poultice is felt in removing the tension, as well as in facilitating the discharge from the Meibomian glands*, folicles†, caruncula§, lachrymalis¶, and conjunctiva, which removes the inflammation. This is the only modus operandi I can ascribe to this remedy. I have applied it in many other instances with equal success. Should it fail, however, leeches are to be applied, two on each temple, and a blister behind the ears, and kept open till the disease be removed. The bowels must be kept regular by castor oil, or mixture Section V. No. 2. of Purgatives; but in the first instance, they should be invariably purged. After these remedies the eyes should be guarded from the light by a green shade for some time subsequent to recovery. The diet must be low during the inflammation. If we find the poultice fail, (for let not my readers forget my sentiments respecting specifics,) I recommend two leeches to be applied to each temple, and a blister behind the ear, or both ears, if both eyes are affected together, with cold application to the eye as follows:

Sugar of lead, one drachm;
Water, three ounces;
Rose water, three ounces.

Mix; apply constantly the above to the eye, by wetting a folded cloth, which is to be retained by a bandage.

* Small glands between the conjunctiva and the cartilage of the eye-lid, called after the person who discovered them, Meibomius.
† Species of gland; from *follis*, a bag.
‡ Vide Plate X. Fig. 2.
§ A small reddish granulated oblong body, situated between the internal angle of the eye-lids, which are professionally called palpebræ, and globe of the eye; but it is not fleshy, as its name would insinuate.
¶ Glands which secrete the tears.

SECTION XXIX.

Treatment of Purulent Ophthalmia.

(See Part II. Section XXIV.)

The description of the foregoing disease will show my readers that it is an effect of the latter, and that the poultice is an effectual cure. But we will now consider a case of purulent ophthalmia, where its first stage of inflammation has not been properly managed. Generally, all diseases of the eye originate from neglect in the first attack. We shall find both eyes in a fully diseased state, the coats of the conjunctiva completely thickened with a film, and the white of the eye changed to a kind of dark brick-dust colour: there will be a hot ichorous* discharge run down by the nose, actually corroding the skin, and the edges of the eyelids become abraded and sore. The patient is in a constant state of irritation. The first thing to be done is to wash the eyes with soap and warm water, and keep them clean by repeating the ablution at least ten or twelve times a day. A poultice is to be applied as often as the eye is washed, both day and night, for eight days. Give blue-pill two grains, every evening; and mixture Section V. No. 2. of Purgatives every other morning. At the end of eight days, the poultice is to be discontinued, and the whole of the upper and under eyelids externally are to be lubricated with the nitrated quicksilver ointment, and a green shade is to be worn to guard against the rays of the sun. Fifteen days subsequent to this treatment, the following wash is to be used very frequently: Table salt, four drachms; water, six ounces.

* Greek derivation, meaning an acrid discharge, which corrodes and irritates the part.

SECTION XXX.

Treatment of Inflammation of the Throat.

(See Part II. Section XXV.)

It is not unusual that this affection* is produced from checks of perspiration, and is often very violent. If the throat be dry, and the breath hot, and respiration quick, the pulse full, and the skin hot, two leeches must be applied on each side of the neck, and likewise two small blisters behind the ears. The bowels must be opened by mixture Section V. No. 2. of Purgatives. Should much pain be evident, the steam of hot water through a clean hookah snake will be useful. Of course a child cannot be taught to gargle the mouth; but the following may be found useful to wet the tongue with occasionally:

Vinegar, one ounce;
Vinegar of squills, one ounce;
Water, four ounces.

In event of much fever, give the following for one or two nights.

Calomel, three grains;
Antimonial powder, three grains;
White sugar, three grains.

Mix; drop it on the tongue, and wash it down with water. Keep the bowels well open. The warm bath will be useful. Should other means fail to ralax the skin, fever mixture Section V. No. 8. will be beneficial.

SECTION XXXI.

Treatment of Hooping Cough.

(See Part II. Section XXVI.)

The technical term by the profession given to this disease is Pertusis‡. It originates often in a slight cold, and inflammation is the consequence of neglect: the coughing becoming longer and more violent, arrests attention.

† Let me advise the patients of the fact, that sore-throat is often produced by acid in the stomach, which one or two doses of magnesia effectually removes.

‡ From *per*, much, and *tusis*, a cough.

Convulsion has, however, perhaps commenced. The little patient, feeling difficulty in respiration, and in recovering breath, sends forth a shrill sound like the crowing of a cock, from the throat. This affords relief, but it is of short duration, as a repetition of the same symptoms follows one another until a vomiting of phlegmy matter ensues. It is evident that this disease is dangerous to infancy, as there is much determination to the head. Our first object must be to clear the stomach with one teaspoonful of antimonial wine*, and then to look to the determination of blood and arterial circulation, which we must restrain, first, by applying one or two leeches on each side the throat; then, having premised three grains of calomel, and purged the bowels with mixture V. Section 2. of Purgatives, we must use sedatives by digitalis in form Section VII. No. 2. Apply a blister between the shoulder blades. If the patient be very restless, mixture Section V. No. 8. will be of great service; and if the cough is violent, cough mixture, article Excretories, Section V. will prove very beneficial. Low diet at first, and to be progressively increased with the improvement of the child to middle. The warm bath will also be beneficial.

SECTION XXXII.

Treatment of Pneumonia, or Inflammation of the Lungs.

(See Part II. Section XXVII.)

Bleeding is the only sure remedy in this disease; but my readers will scarcely perceive an instance of it in India. Should one occur, four leeches must be instantly applied between the shoulders. The mixture Section V. No. 2. of Purgatives administered instantly, with a view to purge the bowels, which are always to be kept open. Having premised depletion by bleeding and purging, No. 2. of Seda-

* It may be supposed, that in determinations to the head, emetics are dangerous: their action, however, sometimes removes congestion, and induces perspiration.

tives, Section VII. will prove highly beneficial. The bleeding must be repeated daily, until the urgent inflammatory symptoms abate. The blister must also be kept open by simple ointment, mixed with half of blister ointment, for eight days. When the urgent symptoms are removed, the following will be found beneficial:

Nitric acid, two drops;
Water, two drachms.

To be given three times a day for ten days. The bowels must be kept regular, and whatever food is given ought to be in a liquid form, such as soup, &c. but the barley beverage is the best.

SECTION XXXIII.

Treatment of Consumption.

(See Part II, Section XXVIII.)

When this disease has once taken place, we can only palliate, we cannot cure. All chance of success in these constitutions, lies in the prompt use of remedies stated in the preceding affection. The efficacy of medicine consists in prompt and decisive bleeding; but when Pneumonia has been permitted to proceed to the length of producing suppuration, or otherwise consumption, the hope of cure has flown. The palliative measures are to allay irritability, and to restrain the energy of the nerves. This is best done by giving carbonate of iron ten grains, twice a day, by keeping the bowels open with small doses of castor oil, and by promoting sleep by occasional doses of the composing mixture Section VII. No. 1. of Narcotics. When the arterial action is great, the digitalis in form Section VII. No. 2. of Sedatives will be indicated. Sea bathing is highly restorative from dejection and depression, and change of scenery is always attended with good effects. The diet should consist of middle, gradually increasing to full, and those vegetables which are easy of digestion. A half wine glass of pale ale in a little water, will be attended with favourable results.

SECTION XXXIV.

Treatment of Inflammation of the Stomach.

(See Part II. Section XXIX.)

I should think it almost impossible to recover an infant from this affection, when it is very violent. It is treated, like all other inflammatory affections, by bleeding, purging, blistering, and warm bath. The first thing to be done is to apply a blister along the spine, and six leeches to the small of the back. No medicine can be taken into the stomach, as the irritability of that viscus is such that nothing is retained. We must, therefore, clear out the bowels by giving every hour injections Section V. No. 1. of Clysters, and at the same time keep the feet in water as hot as the child can bear it, for three hours, which will determine the blood to the extremities, and excite a copious perspiration. Even nourishment must be given by clyster; in short, nothing ought to be taken into the stomach, excepting very weak congee, as it will induce irritation, and keep up the inflammatory tendency. The following enemas may be given, four, or five, or six times a day: it is, however to be remembered, according to the urgency of symptoms, so must be the repetition of bleeding: it must be daily, or twice a day, if expedient.

Take jelly of arrow-root, four ounces;
Olive oil, very sweet, one ounce.—Inject, warm.
Or take of mutton soup, eight ounces.—Inject, warm.

If there should be much restlessness, the following:

Mutton soup, three ounces;
Tinct. of opium, three drops.—Inject.

If there should be much spasm, the following:

Camphor mixture, four ounces;
Tinct. of opium, two drops.—Inject.

When the urgent symptoms are removed, we may commence operations in the stomach, by giving the following:

Camphor mixture, eight ounces; See Section VII. No. 3. of Sedatives;
Tinct. of opium, 20 drops;
Epsom salts, one ounce;
Mucilage of gum arabic, two ounces.

One table spoonful every two hours. Give congee by spoonfuls at a time as nourishment, and we may gradually increase the consistence of the congee, until the barley beverage be admissible. The bowels must be kept well open.

Section XXXV.

Treatment of Abscess in the Stomach.

(See Part II. Section XXX.)

This is an effect of the former, and the matter generally forms within the chest, what is called by medical men the Mediastinum, which is a duplicature of the fine membrane which divides the chest into two parts. When the abscess is formed, it bursts, and it either disappears, or the death of the little patient is the consequence. In this case, I have no doubt that surgical aid will be called for; if not to be procured, however, the following medicine must be given.

Decoction of bark, one pound;
Sulphuric acid, one drachm;
Tinct. of bark, two ounces.
Mix; and give a table spoonful four times a day.

The diet must be such as jelly, rich soup, &c. with two wine glasses of beer daily; the bowels to be kept regular. It is most probable that the stomach will reject all nourishment, and the injections mentioned in the preceding section will be found indispensable.

Section XXXVI.

Treatment of Inflammation of the Bowels.

(See Part II. Section XXXI.)

It is one of the most difficult diseases we meet with, in respect to the application of remedies; as in inflammation of the stomach, it is impossible to administer medicine by the mouth, in consequence of a constant vomiting; nor can we administer it, in many cases, by enema, on

account of the great contraction of the anus. When this latter is possible, we must use the same injections as in the inflammation of the stomach. Immerse the patient constantly in the hot bath, and apply six leeches over the navel, and a blister along the spine. As soon as the possibility offers of administering medicine by the mouth, the mixture Section V. No. 2. of Purgatives must be given, premised by three grains of calomel, until the bowels are copiously opened. The same diet and subsequent remedies are to be adopted as in the inflammation of the stomach.

SECTION XXXVI.

Treatment of Abscess in the Bowels.

(See Part II. Section XXXII.)

This is an exceedingly difficult disease to cure in infancy, and, to be successful, requires the greatest nicety in the use of remedies and diet. Our first object must be to remove the torpor of the bowels by outward pressure, and this is best effected by making a roller of new and very fine Welch flannel, about four inches in breadth, which is to be wound tightly round the bowels four times. This will give immediate comfort, and remove, in a great measure, the griping pains which attend this disease. Our next object is to allay irritation, which is to be effected by large doses of calomel of eight grains in each, twice a day, for five or six days. I have given infants eight grains in as much sugar, and have found, by so doing two nights successively, I have stopped the disease. For the first morning, we must give one table spoonful of castor oil, which ordinarily proves very beneficial. After this course, the following will generally restore health, viz. the Copaiba mixture, page 239. The diet must be low; to be gradually increased as the child improves. Should the child be very restless, the narcotic, Section VII. No. 1. may be given.

Section XXXVII.

Treatment of Inflammation of the Kidneys and Bladder.

(See Part II. Section XXXIII.)

While we pursue the same line of treatment as in the preceding case of inflammation, with respect to bleeding, purging, and diet, in this complaint we must not blister, as the absorption of the cantharides would increase the stranguary. Our first attempt must be to apply six leeches to the small of the back, and, when done bleeding, to dip the patient in the hot bath, which is to be repeated three times a day. Over the bladder we are to use fomentations between the baths; and we must open the bowels with mixture Section V. No. 2. of Purgatives; after which give the mixture Section V. No. 2. Diuretics, should the preceding fail to quench thirst and excite perspiration. In event of the irritation at the stomach preventing the taking of the mixture, we must use purgative enemas. The diet and after treatment are to be the same as in other inflammatory affections. When the urine once flows freely, the disease rapidly disappears. If the child can get no sleep, mixture Section VII. No. 3. of Narcotics may be given. The hot bath seems to be most beneficial in this affection.

Section XXXVIII.

Treatment of Abscess in the Kidneys and Bladder.

(See Part II. Section XXXIV.)

All we have to do in this case is to keep the bowels well open, and use frictions night and morning on the region of the bladder, for half an hour, with the ointment Section VII. No. 2, article Convulsion; and the Copaiba mixture, page 239, will be found an admirable remedy; care being observed, however, that the bowels are kept

free with the usual purgatives. The diet must be nourishing; and a flannel bandage, tightly drawn, worn over the bladder.

Section XXXIX.

Treatment of Inflammation of the Liver.

(See Part II. Section XXXV.)

In this case, the most prompt measures are necessary. Six leeches must be applied to the side, and repeated on the following morning. Should the pain be very acute, and the pulse full, a blister must be applied over the whole region of the spine, and dressed with mercurial ointment. Two grains of calomel, combined with one of antimonial powder, are to be given every two hours, and the mixture Section V. No. 2. of Purgatives, until the bowels are copiously opened. We must not remit until that medicine operates; and if it fails, administer clyster Sect. V. No. 2. until the bowels are moved. The little patient must sit up to the navel in very hot water, until the bowels show a disposition to move. In event of much irritation, let the infant take mixture Section VII. No. 2. of Narcotics; and should the head be very hot, we must wrap a towel, wet in vinegar and water, round it. The blister is to be kept open with half mercurial ointment, and half blistering: these, mixed together in equal proportions, will be found an admirable dressing. The subsequent treatment and diet to be the same as in other inflammatory affections.

Section XL.

Treatment of Abscess in the Liver.

(See Part II. Section XXXVI.)

In endeavouring to remove this disease, our attention must be directed solely to the bowels, and biliary secre-

tion. When an abscess in the liver has burst, and the matter has been passed off by the stomach and bowels, all is safe, and it must be our object to prevent a second formation, which would certainly destroy the functions of the liver altogether. To effect this purpose, it will be necessary to give of the blue-pill two grains, calomel one grain; and to keep the bowels open with the mixture Section V. No. 2. of Purgatives, which must be given every morning to produce one or two copious motions. The ointment Section VII. under article Convulsion, is to be rubbed upon the abdomen night and morning. The above course will be necessary for about a fortnight, when the subcarbonate of iron must be given twice a day, in doses of ten grains, which in another fortnight will probably remove the primary disease. After which, the hope of a permanent establishment of health rests entirely on sending the child to Europe.

Section XLI.

Treatment of Inflammation of the Brain.

(See Part II. Section XXXVII.)

The only certain remedy is bleeding, and that must be done immediately, or hope of recovery will be vain. I remember my medical professor relating the conduct of a student, whose judgment, followed up with decisive measures, gave the first proof of that surgical talent for which he was afterwards celebrated. A gentleman was thrown from his horse, and stunned, or, in other words, received a concussion of the brain. He was conveyed to a bed, and our surgical tyro followed, offering his professional aid, which was accepted, as there was no experienced surgeon at hand. He immediately bled the patient to the extent of 30 ounces of blood, who then began to breathe, by giving one deep inspiration. The young surgeon waited half an hour, and finding stupor continue, resumed the lancet to the same extent as before. Here the patient's eyes opened, and respiration followed.

Another hour elapsed, and the patient, instead of making farther progress towards recovery, was again relapsing into a comatose state, which induced the young surgeon to break a vein a third time, to the amazement and horror of the bystanders; but they were immediately relieved, by hearing the arrival of Ashley Cooper announced. "Oh! dear Sir!" exclaimed many voices, "this boy—a mere child, has taken every drop of blood the poor gentleman had in his veins." After Sir A. Cooper had examined the patient, he surveyed his brother novice with feelings of the greatest pride and delight, acknowledging, without hesitation, that he had never witnessed more professional surgical judgment in his life, nor a more bold and decisive support of it, which had unquestionably saved the patient. He concurred in the necessity of the third bleeding, which effectually restored the circulation through the brain*, and the restoration of the gentleman to his usual health, after the other customary course of remedies had been used.—I have mentioned the foregoing fact, in order to direct the attention of my readers to the necessity of prompt and decisive measures in diseases affecting the brain, as well as indeed in all inflammatory affections. We must, therefore, immediately apply three leeches on each side of the neck, and apply cloths wet with vinegar and water, to the head. The sympathy between the stomach and liver is such, that the irritability of that viscus prevents the retention of medicine. If this should be the case, the enemas, as in inflammation of the stomach, must be employed, and a treatment very similar to that laid down for apoplexy; but, should the stomach retain medicine, mixture Section V. No. 2. of Purgatives must be given, with a view to open the bowels. In addition to the mixture of digitalis, Section VII. No. 2, the warm bath will in like manner be indicated. The bleeding must be repeated, should the first fail. The diet must be the same as in other inflammatory affections.

* See Part III. Section XXVIII. on the treatment of ophthalmia.

Section XLII.

Treatment of Abscess in the Brain.

(See Part II. Section XXXVIII.)

The description of the symptoms will convince my readers that they portend a fatal issue. The only hope is in the liquid being so light as to render tapping of the brain practicable.

Section XLIII.

Treatment of the Rickets.

(See Part II. Section XXXIX.)

This disease is the consequence of inflammation, by which the spine is, as it were, softened. Should inflammation exist, blistering, with bleeding, and opening medicine, will doubtless go far to prevent rickets; but when once the inflammatory stage has subsided, I have found the carbonate of iron, ten grains three times a day, an effectual cure, together with rubbing along the spine the ointment Section VII. article Convulsion. The diet must be nourishing, and the child placed invariably in a horizontal position.

Section XLIV.

Treatment of Rheumatism.

(See Part II. Section XL.)

The cure in this complaint consists in rollers of flannel, folded seven or eight times round the joints. The following draught, also, will invariably be found to afford relief, and generally a cure:

Vinegar of Colchicum, ten drops; water, half an ounce. To be given every night and morning.

The child is to be kept moderately warm, defended from cold and damp currents of air. The diet should be "middle."

SECTION XLV.

Treatment of Worms.

If my readers have perused the description of worm affections in the second part of this work, they will readily acknowledge, that when the human subject in infancy is assailed with this troublesome complaint, it requires much judgment to discriminate the symptoms from those which are exhibited in other morbid derangements with which the constitution is afflicted. The disease, therefore, is of that importance which has necessarily called forth the attention of all classes of persons, from the highest in attainments in the medical profession, to the lowest grade in the nursery. Every old nurse knows of some specific for worms, and every shop vends some description of nostrum. Those who are versed in the nursery dialogues well know, that every time the olfactory nerve titulates, the nurse always is the first to call out, that she is certain the poor dear is falling away from worms, although the infant at the time may scarcely be able to breathe from fat; or if a child should be constitutionally thin, then indeed the case is beyond equivocation. Hence as all persons deem themselves skilled in the treatment of these affections, each try their skill; and if as much attention was paid to a child's diet as is now devoted to every atom of its dejection, doubtless it would be spared the ordeal it is now about to experience, in the adminstration of a variety of strong remedies; and parents would in like manner be spared anxiety, waste of time, and unnecessary expense.

But while the nursery has had its day in contending and guarding against these *intestine* rebels, so have the learned heads of the medical profession erected their bulwarks, which they have called *Anthelmintics*, (derived from the Greek "*from*," "against," and "*a worm.*") I shall satisfy all parties, by describing the various ingredients with which these are compounded, giving the names of the propounders, and the lucky hits by which these nostrums were discovered. Dr. Heberden gave a very interesting

description of symptoms produced by ascarides in the 1st vol. of the Medical Transactions, and as a most useful purge recommended cinnabar and rhubarb, which according to his experience never failed to bring away a mucus as transparent as the white of an egg, and in this many ascarides were moving about. The cinnabar frequently adhered to this mucus, which did not come off in large quantities when a purge was taken without cinnabar.

Cinnabar is a preparation of mercury, and is called in the shops the red sulphuret of quicksilver. Besides Dr. Heberden's success in the administration of cinnabar, the doctor experienced great efficacy in the use of large doses of common salt, and gives the following singular case in confirmation of his assertion. In February 1767, the patient was seized with uncommon pains in his stomach, attended with nausea, vomiting, and constipation of the bowels, and an almost total loss of sleep and appetite. He soon became emaciated, and could neither stand nor walk upright; his belly grew small and hard, and closely retracted, insomuch that the sternum covered the navel, and the latter could scarcely be discovered or felt by the finger; his urine was always milky, and soon deposited a thick white sediment; his excrements were very hard and lumpy, resembling those of sheep, only of a brown colour, nor had he ever a stool without some medicine or other to procure it. In this situation he continued four years, during which time he had been in an infirmary, attended by eminent physicians, but was dismissed as incurable. At last he was advised by a neighbour to drink salt and water, as he said he knew one cured by it, who had for many years been afflicted with the same kind of pains, both in the belly and the stomach. As his disorder was now insupportable, he willingly tried the experiment. Two pounds of common salt were dissolved in as little water as possible, all which he drank in less than an hour. Soon afterwards he found himself greatly oppressed at the stomach, grew extremely sick, and vomited violently. On the fourth straining, he brought up about half a pint of small worms,

part ascarides, and the rest resembling those worms which are called the botts, and frequently met with in the stomach of horses, but much smaller, about the size only of a grain of wheat. The salt now began to operate downwards, and he had five or six very fetid copious stools, tinged with blood, and in them discharged near an equal quantity of the same kind of worms he had vomited. Greatly fatigued with the violence of the operations, he fell into a calm sleep, which lasted two hours, during which he sweated profusely, and awoke much refreshed. Instead of his usual pains, he now only complained of a rawness and soreness of the gullet, stomach, and bowels, with an almost unquenchable thirst; to allay which he drank large quantities of cold water, whey, butter-milk, or whatever he could get. The urine he now passed was in small quantity, and rendered with very great difficulty, being highly saturated with the salt, from whence arose a most troublesome strangury. However these symptoms gradually abated by a free use of the liquors above mentioned; and on the third morning he was so well recovered, that he took two pounds more of salt, dissolved in the like quantity of water. The effects were nearly similar to the former: only that most of the worms were now burst, and came away with a considerable quantity of slime and mucus. The drought, strangury, &c. returned with their former violence, but soon yielded to the old treatment. He sweated very copiously for three days, slept easily, and by that time could extend his body freely. On the fourth day he left his bed, and though very weak, could walk upright; his strength and appetite soon returned, and he became robust and well.

The above, to the extent of my reading and information, is the only recorded instance where common salt has been adopted. Mercury, on the contrary, became one of the most popular and potent weapons in the hand of innumerable practitioners. The only difference was in the formula of preparation. Many preferred calomel, some corrosive sublimate; others boiled the crude metal in water, which water, being drank, was deemed an almost certain cure.

Granulated tin was for some time celebrated as a specific: by its weight and grittiness it was supposed to rub off the mucus, and the worms which that contained. Mr. Duguid of Jamaica communicated, that the inhabitants of that island were affected almost endemically with worms, which were discharged both by stool and the stomach. He relates an instance of a child of seven months old, who died of vomiting and convulsions. Twelve large worms were found, entwisted in such a manner as completely to obstruct the passage in the bowels. This gentleman, as well as all the inhabitants of that island, found the *Geoffroya inermis*, or cabbage-bark, a safe and effectual remedy, and the most powerful vermifuge known. He owns that it has sometimes violent effects; but that it frequently brings away as many worms by stool as would fill a large hat. Mr. Anderson, surgeon of Edinburgh, confirms the success of this remedy. From him we learn, that there are two different kinds of bark, the one much paler than the other. It often happened that nausea, loose stools, with uneasiness in the bowels, were induced; in some instances fainting. The darker coloured resembled the *Cassia lignea*, though it is of much coarser texture. He took two ounces and a half of this bark, and boiled it in two quarts of water to a pint and a half. Of this a tea spoonful may be given at first in the morning, gradually increasing the quantity till four or five table spoonfuls a day are taken. When exhibited in this manner, Mr. A. never witnessed any violent effects from the remedy itself. After the use of this decoction for eight or nine mornings successively, a dose of jalap with calomel was given, which seldom failed to bring away the worms, some dead and some alive.

Dr. Rush of Philadelphia states, that he has seen this bark made into a syrup, of which he had used 80 pounds, and never found it fail in a single instance.

On the same mechanical principle which induced to the use of powder of tin, the cow-hage, or cow-itch, the *Dolichos urens* or *pruriens* of Linnæus, has been prescribed. Dr. Bancroft, who has given a very particular account of its use in his Natural History of Guiana, believes it to be

one of the safest and most certain anthelmintics yet discovered. Dr. Saunders of Guy's Hospital prescribes it as follows:

Cow-hage, one drachm;
Syrup,* as much as is sufficient to make it into a proper consistence.

One tea spoonful is a dose: it may be repeated for three days: on the third day it is said the worms appear. The Indian pink, or *Spigelia marilandica* of Linnæus, has been lauded by Dr. Garden of Charlestown in South Carolina. The doctor recommends from 12 to 70 grains of the root in substance, or two, three, or four drachms of the infusion twice a day. Professor Bergius mentions, that he has known instances of convulsions cured by the *Spigelia*, although no worms were expelled by it. Dr. Garden found much efficacy from this plant, in conjunction with snake-root, in curing the remittent low worm fever of children.

Dr. Burton has recommended the leaves of tobacco in worm cases. The leaves are pounded, and in vinegar applied in the shape of a poultice to the region of the stomach, or other part of the abdomen. He mentions, that worms are often discharged in consequence of this application.

The milky juice of the Papaya, the *Carica papaya*, which has long been cultivated in every quarter of Hindoostan, has been found by the inhabitants of the Isle of France and Bourbon, (according to Dr. Fleming,) the most powerful vermifuge that has been yet discovered. The dose for an infant is one tea spoonful of the juice, mixed with thrice that quantity of warm water, or cow's milk: for a child of six or seven months old, one table spoonful: for an adult, two table spoonfuls. A few hours after the patient has taken the dose of the Papaya milk, a dose of castor oil is to be administered to promote the expulsion of the worms.

Such are the remedies which have been set forth for the cure of ascarides. To sum up the whole with my own

* Syrup is a compound of sugar and water. Honey will do as well.

experience, I beg to say, that there are two remedies which I do particularly recommend, which accord indeed with the experience of many others, as proving ordinarily efficacious. The first is mercury in combination with scammony, in the following form.

Take calomel, grains twenty;
Gum scammony, grains forty;
White sugar, grains forty.
Mix, and divide into ten doses. Give one every night in a little conjee, until the worms are effectually purged away.

The next remedy is the milky juice of the Papaya, which is exceedingly simple, and has proved very efficacious.

With respect to the treatment of tape-worm, the remedies which have been recommended are almost as numerous as those set forward for the cure of ascarides: to detail them all would be a waste of time, as there are two remedies which never fail to destroy that troublesome enemy. I shall proceed to mention the first, which is turpentine. The attention of the profession was particularly attracted to this remedy in 1818, by a paper read before the Medico-Chirurgical Society from Dr. Fenwick of Durham. He stated the case of a seafaring man, who was affected with the tape-worm; and observing, that whenever he took gin, he always passed portions of tænia, and experienced relief, it occurred to this person, that if he took some remedy of the nature of this liquor, he might rid himself of this troublesome intruder. He therefore took at one dose a wine glassful of oil of turpentine. The consequence was, that about two hours afterwards he passed with a purgative stool an entire tape-worm, from which time the man never experienced any return of this complaint. A Mr. Hall of Durham, having had this account related to him by the person in question, and being himself afflicted with tænia, took two or three ounces of undiluted oil of turpentine in the morning, fasting; and as it had not operated in two hours, he had recourse to a second dose, amounting, as near as he could guess, to $\frac{3}{4}$ of the first. In about an hour after, he had a purgative stool, and with it passed the tape-worm. A Mr. Greathead,

of 70 years of age, took two ounces of turpentine in the morning, fasting, and, in two hours after, one ounce, both undiluted. The same effect followed. Several other cases are detailed, in which similar benefits were experienced, and which induced Dr. Fenwick to believe the remedy to be established as a specific: and since this paper, several other successful instances have been recorded in various medical periodicals. The dose for an infant, is from two to three drachms.

I shall now proceed to mention the second, and which, in my opinion, is a more safe, and yet successful remedy. I allude to the root of the pomegranate tree, the *Punica Granatum*. Dr. Fleming has the credit of bringing it to modern notice; but to the best of my recollection, Celsus prescribed it in a similar affection. Mr. Home, I believe, at Lucknow, brought it to the knowledge of Dr. Fleming, in a letter that gentleman addressed to the late much respected and esteemed Alexander Russel, Esq. of the medical service on this establishment. A servant of Mr. Home's "had been long plagued with the tape-worm, for which he had taken many medicines prescribed for him by a Hindoo doctor without effect, when meeting one day with an old acquaintance of his, a Mussulman Fakir, named Azim Shah, he accidentally mentioned his complaint to him. The Fakir immediately said, I will cure you; no one else here can. He accordingly gave him a medicine which had the desired effect." When Mr. Home "was troubled with the same complaint in 1804," the servant informed him how he had been cured; and said, if Mr. Home would take the medicine, he would endeavour to get the receipt from the Fakir, which he was certain he could do for a little money. Mr. H. begged he would try, and he succeeded by paying two gold mohurs. Mr. H. lost no time in having the medicines (a powder and a decoction) prepared according to the receipt. Suffice it to say, it was found decidedly efficacious in purging away thirty-six feet of worm. Mr. Russel, after further proof of the efficacy of the medicine, communicated the receipt, for the purpose of its being made public, to Dr. Francis Bu-

chanan, who accordingly had it inserted in the IX. No. of the Edinburgh Medical and Surgical Journal. I have had occasion to use the medicine myself, and have found it unexceptionably successful.

The following is the method in which it is prepared and administered. Eight ounces of the fresh bark of the root are boiled in three pints of water to a quart. Of this decoction the patient takes a wine glass*, (an adult,) and repeats that quantity at longer or shorter intervals, as the sickness and faintness which it generally occasions will allow, until he has taken the whole. The worm is generally voided a few hours after the patient has taken the medicine.

An interesting case has been sent to me† by Col. Francis of Serampore. It is most remarkable, in as much as we regard the infancy of the patient: she was a daughter of Colonel Francis of this establishment ‡. When about nine months old, she was suddenly attacked with convulsive paroxysms. As the child was at the breast, and teething, it was conjectured that difficult dentition was the cause of these alarming symptoms, until the operation of calomel had effected the discharge of some joints of tænia, and discovered the true nature and cause of the infant's sufferings. The Colonel proceeding to Cawnpore at the time, fortunately became acquainted with a Cashmerian physician, who prescribed for the child half a tea spoonful of the juice expressed from the young roots of the pomegranate tree, mixed with a table spoonful of *dhye* §, with a little sugar, which was administered twice a day. The effect of the first dose was merely partial; but after a lapse of two days, the dose being increased to a tea spoonful of the juice, and two of *dhye*, a worm was voided, nearly a hundred feet in length. The worm being extraordinary from its length, was sent, preserved in spirits, to Dr. Meik, our present 1st Member of the Medical Board.

* The dose can be proportioned for an infant by the table at the end of Part III.

† May 1828.

‡ The occurrence happened in 1809.

§ A kind of curd.

SECTION XLVI.

Vaccine Inoculation.

The eighth day is perhaps the best, on which matter should be taken; but there are many who deem the fittest period to be, when the areoli is perfect, or at any time during its appearance.

The lancet is to be introduced horizontally, care being observed that the incision does not extend beyond the limits of the virus, as to produce blood. When the lancet is well charged, the upper part of the arm, inclining to the inside, is to be vaccinated. The point of the lancet which introduces the matter, is to remain about one minute.

This is the ordinary method in use of inoculation; and when the virus is introduced from the arm of another, it is generally successful.

But having intimated, at Section XLII. of Part II. that there is considerable difficulty in producing the infection in some children, I proceed to direct to means by which this may be, to a considerable degree, if not *in toto*, finally removed. To remove an obstacle, we must first ascertain how it originated, and what induces to its continuance. I have, in another part of this work, alluded to vessels which are called absorbents, (from *absorbeo*, to suck up,) which takes up any fluid from the surface of the body, and carries it into the blood. The principle by which this function takes place, is from a power inherent in the mouth of the absorbents, dependant on the degree of irritability of their internal membrane. Now this function is greater in some than in others: where, therefore, there exists a torpor in the mouths of the absorbents, there, we shall find, is it difficult to introduce the vaccine infection. Having thus traced the cause, we proceed to consider how it is removed: that is explained, if we reflect upon the *modus operandi* of mercurial friction; that is, by friction we irritate the mouths of the absorbents, and thus excite them to carry the mercury into the system.

Pl. VII.

Representation of the Pustules of the Cow Pox.

We conclude, therefore, irritability will excite similarly the absorbents in the arm, by which we remove the obstacle to the introduction of the infection into the blood, and doubtless here lies the secret of successful inoculation.

Repeated puncturing the skin with the point of a lancet well charged with virus, in a similar manner to that by which seamen with a needle introduce powder under their skin to puncture their names, figures, &c. will excite the absorbents: at other times, the vaccine may be made to succeed by gentle friction over the part, just before the introduction of the virus.

But another cause of failure may arise in obtaining good vaccine virus, in situations and at periods where it cannot be procured from the arm.

The ordinary manner in which it is received, is either in the form of scab, or on two pieces of glass. Both of these methods frequently fail.

I believe the best mode to be, and which I recommend is, to have one or two lancets charged with the matter, by which expedient we do not require the dilution of water, as in the instance of scabs, or to separate it, as in that of glass, but all we have to do is to introduce the matter as it is, on the point of the lancet. The second best method is to charge cotton threads, by taking them through the vaccine pustule; and in those cases where much torpor attends, we may draw these threads through the skin of the arm, and by allowing one to remain a few minutes, doubtless the matter will be absorbed, and thus will the disease be produced.

When effect has taken place, we shall observe a small red spot, with a degree of elevation, which may be seen on the third day*. When examined by a magnifying glass, it seems to consist of a small tumour surrounded by a slight efflorescence. Between the third and sixth day a vesicle appears, the size of which will depend upon the extent of the puncture made by the lancet: if the incision has been small, the vesicle will be small and circular. The edge of the vaccine vesicle is elevat-

* Plate VII. represents perfect vaccination.

ed and well defined; the centre is depressed, and a speck is there visible. This vesicle is distinguished from all others by the peculiarity of its structure, which is cellular, and somewhat hard and firm. At first it is a light pink colour, sometimes blended with a bluish tint, changing its progress into a pearl colour. Its contents are limpid, and almost colourless. It commonly increases in size until the tenth day. In its early stages, it has usually a small inflamed ring about its base, which about the ninth day begins to spread rapidly; and about the tenth forms an areola, more or less circular, an inch and a half or more in diameter. This areola is of a pink, scarlet, or crimson hue, and is attended with some degree of hardness or tumefaction. It continues nearly stationary a day or two, and then begins to fade. On the formation of areola, the vesicle begins to decline; first turns brown in the centre, and finally is gradually converted into a dark, smooth, and shining scab, which falls off about the end of the third week*.

Such is healthy vaccine. Deviations are, however, sometimes observed, with respect to the rise, duration, and contents of the vesicle. It seldom or never appears earlier, but often later, than the period here mentioned. I knew two or three children, in whom the disease did not appear until the seventh day. It has been known not to appear till after the expiration of a fortnight or three weeks; but if there is considerable deviation from the usual course, we may then consider the pustules spurious. If the progress of the vesicle is too rapid, its contents yellow or opaque, its texture soft, its centre elevated; a distinct vivid circumscribed areola is wanting, and when it is broken, we observe ulceration, and a spreading, pasty scab:—such vesicles are undeniably spurious†.

In conclusion, great care must be observed that the lancet is neither blunt or rusty, both of which might produce spurious pustules.

* Plate VIII. represents the daily progress of the disease.
† See page 202, the last four lines of the first paragraph.

When such spreading and ichorous ulcerations are produced, the application of a small quantity of the nitrated mercurial ointment will prove an effectual remedy.

SECTION XLV.

Treatment of Cholera.

(See Section XLIII.)

Should the symptoms of this awful visitation proceed from a morbid accumulation of acid in the stomach*, the administration of mixture No. 6. Section V. will be found an effectual remedy. If, however, the disease arises from a check given to perspiration, bleeding and large doses of calomel and laudanum will be indicated, and manifest, in their operation, an equally remedial effect.

Many men will be as ready to contend this point with me, as I am to defend it. Had I singly my own bare evidence to substantiate what I myself have experienced, and none to bear testimony in support of my principles and assertions, it would be as fruitless, as a waste of time to trouble my readers with my sentiments and opinions: but I have an overwhelming evidence in support of my treatment. The Madras Reports, as well as those published by the Medical Board at Bombay, testify that the system laid down by me was the one the medical gentlemen of those Establishments, with few exceptions, had adopted, and from which they had experienced invariable success. Not so on this portion of the Indian continent: *my remedies, uncombined with others,* have been very rarely prescribed; and it is well known, that with respect to success in their treatment, it has been as rare as the others were eminently great.

I must impress on the minds of my readers the cause, by a repetition of my assertion, that I ascribe it to not using my remedies uncombined with others. It is true, that large doses of calomel and laudanum were prescribed; but these were combined with stimulants, such as brandy, ammonia, &c. which according to the principles I laid down as a guide to treatment, was highly inju-

* See page 155.

dicious and erroneous, in respect to affinity of operation*. The operation of brandy and ammonia is in direct variance to large doses of laudanum and calomel: the former are among the most potent stimulants; the latter are in effect the most certain sedatives. If, as a remedy, we were anxious to apply cold, we should possess it in ice; but how obviously would that remedy be destroyed by adding boiling water! Not less so are the sedative effects of large doses of calomel and laudanum destroyed by the combination of brandy, ammonia, or other stimulants. The injudiciousness of such combinations, where there is no regard whatever bestowed on the affinity of operation, is indisputable.

In making these declarations, I do not wish to impugn the character of any one; but not to expose an error which has been too fatally promulgated, would be in me as great a guilt as his, who knew of a shoal in the ocean, but from motives of delicacy towards surveyors or pilots, who ought to have known it as well as himself, permits the wary mariner to run his ship to be wrecked, while he coolly and unfeelingly stands by as a cruel witness of the sacrifice of every soul, which, by the timely communication of his information, might have been saved.

My doctrine of cure has never changed. It was promulgated by the Marquis of Hastings in General Orders, and communicated officially at the three Presidencies. But as there may be many who have not perused that document, before I enter upon the subject of the *modus operandi* of my remedies, it will be necessary to give the following extract.

" The symptoms are as follow: violent vomiting and purging of watery matter; spasmodic cramp in the extremities, extending to the abdominal and muscles of the chest; a collapsed countenance; the pupil and the white of the eye covered with a thick film; a suffusion of blood, and turgidity of their vessels; the eye at length sinks into the socket, and immediately becomes fixed. The extremities now become cold, and the pulse is not to be felt, and indeed the energy and action of the heart are

† See page 211.

considerably diminished. The first man I saw thus affected, was treated with three grains of calomel, and a quarter of a grain of opium every two hours, with frequent draughts of brandy and water, and other stimulants. The man died, and I opened him on the same evening. I found the stomach partly filled with muddy water; the bowels were empty, and considerably inflated with air; hardly any bile in the gall-bladder—none in the biliary ducts: there was general inflammation of the bowels, liver, stomach, and lungs. These were indications to follow a directly opposite mode of treatment. Consequently, on assuming the charge of the native hospital for the reception of camp sick of the centre division of the army, on the 16th of this month, one hundred and ten patients* were admitted with the symptoms I have described. I immediately gave to each patient 15 grains of calomel, which I dropped on the tongue, and washed it down with 60 drops of laudanum, and 20 drops of peppermint in two ounces of water.

"Before I go further, it will be necessary to mention to you, that laudanum in a large dose of 60 drops is not a stimulant, but a sedative, whereas laudanum, from 15 to 20 or 30, is a stimulant: the former, producing sound sleep, removes pain and irritability, whilst the latter excites considerable uneasiness and convulsive startings. It will appear the more remarkable to you, when I also mention, that the variation of a dose of calomel has the same effects. Calomel, in a dose from 5, 8, to 10 grains, excites lassitude, sickness, irritation of the bowels, and, on account of its being a stimulant, acts as a good purgative; but calomel, in a dose from 15 to 20 grains, is a sedative, allays vomiting, removes spasms, sends the patient to sleep, and produces one or two motions. You will now observe on what principle I treated my patients; not on a plan of giving powerful stimulants, but on one which at once removes the irritability and spasms, composes the stomach and the bowels, produces

* Let it be understood here, that when I talk of 110 patients, I allude to such who complained on the instant of attack. The first morning of the opening of my hospital, I had nearly 18 or 20 carts filled with dead and dying sent to me, who were attacked on the line of march.

sleep and tranquillity of the mind, excites the secretion of the liver, and prevents the progress of the inflammation.—On the second day, it was, indeed, a consolatory sight, to observe the wonderful change. The vomiting and the purging had stopped; the spasms removed, with the general moisture on the skin; they had experienced sound sleep, and the pulse had returned to the wrist*.—I now gave 30 grains of jalap, which effected one or two bilious motions. Of the one hundred and ten men, I lost only two, and those were decrepid aged men, in whom the vital energies were at once extinguished. The remaining one hundred and eight I had the good fortune to see all recover.

"In the treatment of Europeans, however, I should strongly recommend copious bleeding, and never less than 20 grains of calomel, with 60 drops of laudanum, and 20 drops of peppermint, in two ounces of water; —and, on the spasms attacking the abdomen, the application of a large blister. Should the blister fail in drawing, and the blood not flow from the veins, immersion in the warm bath will have beneficial effects. Should the warm bath not be procurable, warm frictions and pots of warm water thrown over the patient, will produce an equally favourable result in bringing about the reaction of the circulating system.

"When the purging and vomiting are incessant, as well as violent, we ought never to be alarmed in giving as far as 80 drops of laudanum, with 20 drops of peppermint, and 20 grains of calomel, and injecting 40 drops of laudanum in congee by enema.—A few hours determine the safety of the patient, therefore those few hours must not be lost in an undetermined manner, and by small and useless doses. After the first attack is over, that is, after three or four hours, if there be much spasms and irritability remaining, the dose of calomel and draught must be repeated; the patient will then fall into a sound sleep, and awake nearly recovered.—The after treatment will only be to keep the bowels regularly open with ca-

* This is the ordinary expression among medical men, when the pulse resumes its natural beat, on the recovery from any paroxysm, as after an ague or syncope. The pulse was never imperceptible.

lomel and jalap, and to give occasionally 60 drops of laudanum to procure sleep.—It is, however, to be remembered, that it would be an error, and do considerable harm, to bleed in persons who are weak, worn down by disease, and aged.

"The most urgent symptoms in this disease, are violent thirst, and dreadful sensations of burning heat in the bowels and pit of the stomach. The frequent and lamentable calls for cold water should never be satisfied; for I observed many unfortunate camp followers, who had died in the act of drinking. I therefore gave warm congee, and by the means of sentries, prevented any water being taken into the hospital.—Hiccough is not a dangerous symptom in this disease, for there was hardly a patient recovered without suffering this spasmodic irritability.

"*I am of opinion, that unless a patient takes these remedies within six hours after the attack, the case is hopeless;* at least, I only recovered ten patients with the regular form of the disease, after a greater lapse of time, and in those the symptoms were peculiarly mild.

"It is of the greatest importance to bear in mind the necessity of giving calomel in powder, instead of pills; for I have known many instances where pills were passed through the patient in the same state and form they were taken into the stomach. This point, therefore, is of such high importance in fever, dysentery, but above all in this complaint, of which a patient is carried off in 12, at furthest 30 hours after the attack, from which circumstance it becomes necessary to affect the system immediately; otherwise, if this point should be overlooked, the chief object in the operation of the medicine may be frustrated, and the patient lost.—It is on this principle I recommend laudanum in preference to opium—one is directly active in its operation, but the other has to undergo the progress of dissolving; or, perhaps, never dissolving, passes through the system in the same state it was taken into the stomach, without producing any effect whatever. I am so convinced of what I now assert and recommend, that for the last three years, I have never once used any medicine in the form of pills.

And I look back to the day when I first discovered this error in practice, as one great improvement in the treatment of acute diseases.—I have to add, that my reason for using peppermint in co-operation with laudanum, in so large quantity, was its known efficacy in expelling air from inflated bowels and stomachs :—this effect I have always found it to have in the most desirable manner."

My readers will observe, that instead of recommending stimulants, I ground my failure on their adoption. Yet in immediate opposition to what I advanced, the Calcutta Cholera mixture was administered, being a compound of stimulants with laudanum. Success, I believe, was rarely realized from its administration*.

* The following extraordinary prescriptions I extract from the Bengal Hurkaru.

"The Registrar of the Marine Office, has also very laudably published, for the information of all officers of ships in the river, the following instructions, which are given to the native doctors employed at the various Thannahs:—

LAUDANUM.

"On being called to a patient recently attacked with the Cholera Morbus, give from fifteen to thirty drops of laudanum in half a chittack of water, (or an ounce,) according to circumstances. Repeat the dose every five minutes, increasing it by five drops each time, until the vomiting and purging is stopped.

"Should the patient have been violently purged or vomited, and coldness of the extremities, and cold sweat, have taken place, give thirty drops of vitriolic ether, or sixty of spirits of hartshorn, with the laudanum, if purging and vomiting prevail, otherwise alone in water; repeating the dose according to circumstances, until the patient recovers his natural warmth of body and pulse.

"Brandy may be given for the same purpose, diluted in twice its quantity of warm water. Apply warm bricks, frictions, &c.

CALOMEL.

"When the purging and vomiting has ceased half an hour, give three grains of calomel, and repeat the dose every forty minutes until it operates, stopping at twelve grains. Should the twelve grains not operate, infuse two sicca weight of Glauber's salts in a pint of water, and give a chittack every quarter of an hour, until it operates freely."

It will be acknowledged, that this is in quite opposition to my system. The following from the same paper exhibits the success of the Calcutta remedies.

"Our hopes that the seasonable weather would tend to abate the ravages of the Cholera Morbus have been disappointed; for it appears by the official reports, that during the two weeks ending on Sunday last, out of one thousand and seventy-eight natives, whom the disease has attacked, only about half the number were restored."

Now let my readers bear this in remembrance, and compare it with the success which followed the adoption of my remedies in the capital of Bombay.

I am prepared to hear, that there are many who have, after a rigid adherence to my prescriptions, failed in establishing their efficacy, or in any instance restoring to health, and that they have undeniable right to assume, in justification, supported by analogical principles, (I deny that they were the principles of science and experience*,) in having recourse to stimulants in combination with large doses of calomel and laudanum. But I am in like manner prepared to meet this assertion, and show that such denunciations, grounded on plausibility, are repelled by irresistible evidences from hospital practice, which incontestibly substantiates that failure is ascribable *only to a lapse of time which had intervened from the commencement of the attack and the administration of the remedies.* Where this lapse had not taken place, in every case, to the best of my recollection, where there had not been previous disease and decrepitude, my remedies were unexceptionably successful.

Mr. Baker, the assistant surgeon of the 65th, mentioned to me his regret, that in no one instance had he recovered a single patient. I told him my opinion on the cause of failure, and recommended my prescription uncombined with stimulants, on the next occasion of a case coming within his notice. Many days had not elapsed before a man was brought. On the instant of attack, he gave the prescribed doses, and, as it may be supposed, waited

* See Sect. XVI. Part III. where my readers will find, in premising the treatment of marasmus, I urge the following principles for their consideration:—

"Our feelings would naturally lead us, when freezing by cold, to hasten to a fire for warmth, and to obtain a restoration of our natural temperature. This, however, would be, in the highest degree, injudicious; for immediate warmth would induce mortification; and instead of restoring, would, by inducing violent inflammation, excite the most insupportable pain and agony. In this instance, the dictates of our feelings would lead us astray, while experience, on the contrary, would lead us right, by teaching us rather to roll in snow, than wrap ourselves in blankets, because it is necessary to obtain the equilibrium of heat, which has been lost, by degrees and not by extremes. So, in wasting away, the natural suggestion would be, to have recourse to soups and other nutritious food, and to wine, beer, &c. Such a course would be a mad one, for it would certainly kill. Experience teaches us to restore the exhausted functions to a healthy state by degrees, not by extremes."

with great anxiety to see the result, which was the patient's perfect recovery *.

But while such has been my success where any lapse of time had not taken place, equally with others, have I failed to restore in a single instance where this collapse was complete, that is, the extremities cold, and where the pulse had left the wrist. And although I have given trial to the most powerful stimulants, viewing the case similar to that where stimulants have been found of service, as represented by some of the medical gentlemen on this establishment, notwithstanding I do not remember one instance of recovery. And why should we be surprised at our want of success, in a disease which has but a few hours before dissolution occurs, if the main part of those few are allowed to be spent by the power of the disease to the exhaustion of the powers of life?

But I do not, I repeat, remember losing a patient who reported himself on the instant of attack, or where the pulse had not left the wrist, nor the heat of life receded from the extremities. What an invaluable medicine is that, therefore, which will cure when given on the instant of the attack! I know this declaration will surprise many, and especially those who have been unsuccessful: but their want of success is easily explained, I mean even in those instances where my remedies were exclusively given.

When the disease first appears, either in a town or camp, patients are panic-struck, and they do not report themselves immediately: and then, finding the medicine fail, both patients and medical men lose all reliance in it, throw it aside, substitute some other; and denominate the promulgator, as one who circulated a document calculated to deceive or to lead astray. Indeed, by one anonymous writer, I was denounced as an impostor, imputing to me, in a line from Virgil, that I bore a good resemblance to a snake in the grass. I replied to this accuser, and explained the various ways by which my remedies might fail to cure. It was gratifying to me to

* On soliciting this gentleman's permission to my mentioning this fact, I received his unqualified sanction, and to add, that since that instance, two others were treated by the native doctor of the 66th, by his direction, with similar success.

observe the following gratuitous defence in the Bombay Courier :—

"In the Bengal Hurkaru is another of Dr. Corbyn's letters, dated Saugor, July 14th, 1818, in answer to some strictures on his mode of treatment, which in our opinion, he has most satisfactorily refuted. It was our intention to have inserted it in our present number, but a crowd of matter (certainly neither more important or more interesting) will prevent its appearing. Dr. Corbyn's practice on this side of India has been so eminently successful, that we owe him the most unbounded gratitude. Here at least, no *Zoilus* will attempt the destroying of his well-earned fame."

A few days subsequent to the above, I received the following, which is an extract from the letter of the Secretary of the Bombay Medical Board.

"The Board have particularly requested me to express to you the sense they entertain of the service rendered by you to the public in general, in fixing an early attention to the nature and active treatment of this most rapid and alarming disease.

(Signed) GEO. OGILVY,

July 5, 1818. *Sec. Med. Board.*"

I do not send forth these testimonials with any view to sound my own praise, or for the gain of that empty bubble fame, but for the purpose of upholding a successful treatment, and thereby becoming the instrument of a merciful God in alleviating the sufferings which attend on this unparalleled and awful pestilence. To satisfy the most sceptical, the above ought to be sufficient evidence; but it shall not rest on this alone: I beg my readers to peruse the following reports of various medical officers on the Bombay establishment, addressed to the Medical Board.

"The first report is dated Seroor, the 22d of July 1818, by Mr. Assistant Surgeon Wallace. He remarks: "The disease is most formidable. We have found the large doses of calomel, oil of peppermint and laudanum, generally succeed in checking the purging and vomiting. But the most formidable symptoms are the sudden debility and

coldness, which seem to indicate the use of the most powerful stimulants. The hot bath has been found very useful." This gentleman's third report states as follows: "I believe Mr. Corbyn's practice to be very efficacious, when adopted early. The majority of cases did not apply for relief until they had been attacked for some hours, and the medicines were almost invariably rejected, in common with every other liquid. I determined to administer the medicine in another form, and rubbed up two grains of soft opium, with fifteen grains of calomel, and about two drachms of honey. This was gradually swallowed, being dropt into the patient's mouth by the finger. After this he was placed in the hot bath, and small quantities of hot arrack and water, mixed with spices and sugar, given to drink. The patient commonly fell asleep, and in favourable cases awoke free from danger. In others the coldness and spasms recurred, when recourse was again had to the hot bath, and opium administered in various forms. Twenty-two cases only were admitted yesterday, and all of them except two have recovered."

Dr. G. Burrell, Surgeon of the 65th regiment, dates his report at Seroor, 27th July 1818, and makes the following return. It broke out on the 18th instant.

Admitted 21st	1	
22d	6	
23d	6	
24th	18	
25th	22	
26th	7	
	60	Died, 4.

"On admission, I bled in every instance, in general to a good extent. Where universal spasm existed, venesection was carried *ad deliquium*, and the patient was at the same time put into a hot bath of 110. The spasms were, by these means, invariably relieved, nausea and vomiting alleviated, so that the stomach bore the exhibition of calomel in scruple doses, combined with laudanum,

which doses were frequently repeated; in short, the opium was given under every denomination, with calomel, and I believe the calomel will be found to rest on most stomachs *per se*."

The next report is from Mr. Surgeon Whyte, dated Seroor, the 28th of July 1818. He states: "The practice I had followed was that first recommended by Johnson*, and since by Mr. Corbyn, in which the corner stone and sheet anchor is calomel, in a dose of fifteen or twenty grains of the former, to an adult, according to his strength."

We now come to that of Mr. Assistant Surgeon Daws. His letter is directed to Dr. Jukes at Tannah, dated at Aurungabad, 29th of July 1818. He remarks as follows: "I presume you have seen the letter written by Mr. Corbyn, who had charge of the native hospital, centre division of the army, at Eritch, to Captain Franklyn, Assistant Quarter-Master General of the same division. On this subject, I could not perhaps do better than recommend you to pursue the plan of treatment therein laid down, as it is the same, with very little variation, that I have adopted; and you will be glad to hear that the success of my own practice tends to corroborate it."

The next report is from Mr. Surgeon Craw, dated Seroor, 30th July 1818. He observes: "The calomel and laudanum plan, with most diffusible *stimuli*†, and the hot bath, have been eminently successful; and if application is made within four or six hours from the first appearance of the disease, the cure is almost certainly effected." In another place he remarks, that a bleeding *quoad vires*, the calomel and opiate, the hot bath, warm clothing, and *frictions spirituous* or anodyne, form the chain of treatment in the European hospitals here; and these are repeated again and again as the symptoms may seem to demand. Under this plan, and an early applica-

* In his work on the influence of tropical climates on European constitutions, where he quotes the case of a seaman who had swallowed a scruple of calomel.

† By outward friction, as will be seen in the latter part of this gentleman's observations. See the summing up of the Medical Board's preface.—*Author.*

tion for relief, I think the disease is not fatal in more than one in a hundred cases*.

The following report is from Mr. Assistant Surgeon Campbell of the 22d Dragoons, dated from Seroor. "The scruple dose of calomel, with Corbyn's anodyne draught, was given every two hours; but when the spasms and vomiting had ceased, the laudanum was omitted, the calomel continued, and the stimulants† more frequently given."

The next report is from Mr. Assistant Surgeon Tod, dated Camp Chumargoody, August 8, 1818. "The way I have administered medicine is by giving calomel, one scruple, and washing it down with *tinctura opii*, one drachm, and water, two ounces, and repeating them after an hour, if the first dose is rejected. I have sometimes left the interval of an hour, which generally succeeds; but I have, in a few instances, been under the necessity of giving it three or four times." In another place, this gentleman adds:" I have had altogether an hundred cases where the calomel and opium plan has been followed, and though ten or twelve have died, these were either such aged subjects that no rational hope of recovery could be entertained, or were brought in at such an advanced stage of the complaint as to be beyond the power of medicine‡."

Mr. Assistant Surgeon Milwood writes the next report, which is dated Ahmednugger, 2d August 1818. "I will now give my treatment, with my reason for the addition I have made to Mr. Corbyn's. There are two great objects to be attained for the recovery of the patient: 1st, to allay the vomiting and purging; 2dly, to restore the pulse and heat of the extremities, and produce sleep. In order to effect these, I have, in addition to one scruple of calomel, put five grains of antimonial powder, and added to the draught one drachm of spt. æther. nitros§. In

* There is no remedy on record of which we can say more than this, in the cure of any disease.—*Author.*

† Stimulants in the shape of cordials were given after the disease had been subdued, with a view of restoring the lost strength. See the Medical Board's preface, at their summing up of the mode of treatment adopted. —*Author.*

‡ This is precisely my language.—*Author.*

§ These remedies are quite opposed to stimulants.—*Author.*

the course of two hours I give ten grains of calomel and five of antimonial powder, with half the draught, which I prepare with camphor mixture in place of plain water, and repeat this as it is required. The best laxative I have found to be carbonate of magnesia, four scruples. It remains on the stomach, and generally causes two or three plentiful evacuations."

Mr. Assistant Surgeon Richards reports as follows. "Punderpoor, 3d of August, 1818. Up to this morning the admissions amount to 170; out of which eight casualties have occurred." This gentleman bled, and used the calomel and laudanum doses.

To evince how essentially necessary bleeding is, Dr. Burrell sends the following return:

Bled .	88	Died . .	2
Not bled .	12	— . .	8
Total admitted	100	—	10

I now come to Mr. Surgeon Longdill's report, dated Seroor, 17th of August, 1818. "My general plan of treatment was to give the dose recommended by Mr. Corbyn. If it was rejected, another was given, after waiting an hour, with the warm bath, which generally relieves the patients*. After which they required little else but cordials and a gentle laxative."

Mr. Surgeon Robertson, of the European Regiment, on the Bombay establishment, dates his report from Keerky, and states, that bleeding relieved them, and that calomel and opium brought them quite round.

The report which succeeds is from Mr. Surgeon Gordon, dated Satara, 5th of September 1818. "I sent you a report, in which I stated, that I laid considerable stress on free and early blood-letting. Since then I have had eleven cases, bled the whole of them, then opened the bowels, and they are all quite well.

* We do not see any administration of stimulants on the attack, but merely as restoratives to cure debility, with no view or application to the cure of the proximate cause of the disease.—*Author.*

Mr. Surgeon Coates reports to the President of the Medical Board, that " the practice followed in the treatment of this disease at Aurungabad was that recommended by Mr. Corbyn, and had been particularly successful; indeed, if the patient applied in time, it was considered as infallible*.

Mr. Surgeon Jukes next reports, that " experience has now taught us, that a very large proportion of those attacked by the disease recover by the calomel and laudanum alone; but I feel satisfied that there are many aggravated cases, wherein nothing but the most prompt and decided use of the lancet could possibly save the patient."

The next report comes from Dr. Taylor, a gentleman who had the principal practice in the disease at Bombay. This practice is precisely similar to the foregoing; he gives the following return:

" Medicine administered to 7459
Of whom died, ... 441
being a proportion of nearly six to an hundred."

The last report is from George Ogilvy, Esq. Secretary to the Medical Board, confirming the treatment already mentioned; and the reports are concluded with the following abstract of cases which occurred in the island of Bombay.

1817.	Cases.	Deaths.
August	4400	456
September	4804	287
October	2411	146
November	824	44
December	806	64
1819.		
January	889	114
February	517	27
	14,651	1138

" Proportion of deaths in those cases in which medicine was administered, 6. 6 per cent. In the same space of

* This is even going beyond what I myself advanced.—*Author.*

time 1294 cases were reported by the police, in none of which medicine was administered; and it is a most important remark by Mr. Ogilvy, Secretary to the Medical Board, that it was not ascertained *that any case had recovered in which medicine had not been administered.*

"The population may amount to between 200,000 and 220,000. The number of ascertained cases was 15,945, which gives the proportion of the attacks of the disease to the population 7½ per cent."

I believe I have now satisfactorily proved the efficacy of the treatment I recommended. I shall add the remarks of the Medical Board of Bombay, after summing up the whole of the opinions regarding the proper mode of treatment to be adopted.

"On the subject of the cure of the disease we need say but little. The practice so judiciously and speedily adopted by Dr. Burrell in the 65th regiment, clearly proves, that in the commencement of the disease in Europeans, blood-letting is the sheet-anchor of successful practice, and perhaps also with the natives*, provided it can be had recourse to sufficiently early in the disease; and as long as the vital powers remain so as to be able to produce a full stream, it ought never to be neglected, it being sufficiently proved that the debility so much complained of is merely apparent†. Calomel, as a remedy, certainly comes next in order; and when employed in proper doses, with the assistance of opium, more particularly in the early stage of the disease, seems to be equally effectual among the natives as venesection among the Europeans, in arresting its progress. In all the cases formerly alluded to, when we

* In this I have entirely concurred in my printed report, but have there said nothing of this practice among the natives. I tried bleeding with the natives, but could get no blood from the arm; and finding every efficacy from the medicine I prescribed, I had no occasion to make a second attempt: but I have no doubt it will be perceived, from the principles on which I ground the cure, that venesection is advisable in all cases where blood can be obtained.

† This is equivalent to declaring the imprudence of cordials and stimulants; but gentlemen may say they are indicated for the "early restoration of balance in the circulation, and excitability." But I can assure such, whenever this balance is broken by congestion, inflammation will be a sure consequence. See section on the Treatment of Ophthalmia.

met with the disease in its first attack, a single scruple of calomel with 60 minims of laudanum, and an ounce of castor oil seven or eight hours afterwards, was sufficient to complete the cure. The practice of this place, as sufficiently appears from Dr. Taylor's report, bears ample testimony to the controul which calomel possesses over this disease. All other remedies must in our opinion be considered as mere auxiliaries, no doubt extremely useful as such, and ought never to be neglected, particularly the warm bath and stimulating frictions."

I trust the above is satisfactory, and a sufficient voucher to the truth of my system being efficacious. But here let me arrest the attention of my readers, that it may not be supposed that I am assuming to myself a merit to which I am not entitled. I beg to observe, that when I am talking of *my system*, I do not mean to take to myself the credit of being the first to recommend large doses of calomel. In other parts of this work, I have shown it to have been a most ancient remedy in many diseases. Large doses of that medicine have been long since prescribed by medical men in India: and the justly distinguished Dr. Johnson, in his truly valuable work on tropical diseases, enlarges on the success he had experienced from their use in the treatment of fever, as well as states an instance of a seaman, who had swallowed a scruple dose of calomel in this. Laudanum in like manner has been long known to be a valuable medicine in large doses. No credit is due to me for the discovery of these remedies. I am the first, however, who promulgated a system and a principle, the latter by expressly showing the inflammatory nature of the disease, and the former directing to a successful method of cure dictated by the principle. All other systems and all other principles are widely different from mine. The Medical Board of Bombay thought differently, as will be perceived by the following, which I extract from the preface to their reports.

"The public are greatly indebted to Mr. Corbyn of the Bengal establishment, for his clear and comprehensive letter on this subject, at a time when the disease was producing the most dreadful ravages. The early com-

munication of *his practice has been the means of saving thousands of lives**, in situations where Dr. Johnson's work might not be known."

My readers, who have followed me in my opinions and sentiments, will easily perceive that Dr. Johnson's treatment and mine are diametrically opposite. I have urged throughout the danger of using stimulants; Dr. J. is a most staunch advocate in their support. I will quote from his own words, page 229.

"Nature is here, as it were, stunned with the blow, and the struggling efforts which she makes to relieve herself by vomiting, &c. only exhaust her the sooner, if not effectually assisted by art. We must therefore have recourse to more powerful means than wine, laudanum, or lavender. The warm bath—cordials of the *most stimulating kind*, such as warm punch or toddy, must be added to opium and calomel†."

It is the more extraordinary that Dr. J. should have recommended such a system, since he subjoins a letter from Mr. Shepherd, who shows his failure by warmth, volatiles, and opium, and that "*bleeding to syncope* was alone successful," which was equivalent to declaring that the disease was inflammatory.—To throw in *powerful stimulants, where there was inflammation*, would be a system in therapeutics, a physician of Dr. Johnson's acknowledged talents and judgment would never allow. It is but fair, therefore, to conclude that he did not believe the disease to be inflammatory: and I trust I have satisfactorily shown that his (however desirable it might be to side with one so gifted) system and principles are different from mine‡.

I do not mention this fact of difference of treatment between Dr. Johnson and myself, with other views than to show the cause of failure in the treatment of the disease on the Bengal side of India. It will be observed, that

* What can gentlemen, who have declared the disease to be irremediable, say to this language?

† So that the stimulants were directed to remove the proximate cause, not with a view of restoring the lost strength; otherwise Dr. Johnson would not have combined these with calomel and opium.

‡ See Section LXIX. Part III.

in the Bombay Report, at the summing up by the Board, not a word is said about stimulants, with the exception of their subsequent use in the form of friction; depletion by bleeding, and sedatives, being the main and only remedies, as set forward by me. I do not believe Dr. Johnson had seen much of the disease, otherwise a judgment and talent, which I have long admired, (as exhibited throughout his writings,) would soon have seen its inflammatory nature*, and led him, as a consequence, to have laid down a principle similar to mine.

Having thus shown the nature of the disease, and established the success of my remedies, it will suffice to lay down the doses and diet: but lest I should frighten mothers at the extent of the dose of calomel which I am in the habits of prescribing, I beg to observe, that according to the power of the disease, so must be the power of the remedy. In madness, for instance, where there exists an inordinate action and irritability, two scruples of opium have been administered without producing effect. Had there not been that morbid irritability, that dose would have killed the patient. Now there is no disease under the sun, which is attended with greater irritability than the Cholera. With safety mothers may, therefore, administer twelve grains of calomel, and eight drops of laudanum†, with two of peppermint, on the instant of attack, and place both the feet and hands in as hot water as the child can bear, and which are to be continued thus immersed until the disease has been decidedly subdued. After a lapse of eight hours, give a dose of castor oil, and all, with God's blessing, will be well again.

I fully believe, to the best of my experience, that wearing of flannel (old flannel, let it be observed, is useless) is almost a certain preventive.

* See Section LXVII. Part III.
† These are the doses for a child of 17 months to two years of age.

Section XLVII.

Wounds and Accidents.

There is no scene so fascinating and delighting to a feeling mind, as that of witnessing the little sports, vagaries, and romps of children: it communicates a spirit of vividness even to old age; it draws before our eyes the scenes of our youth; it awakens almost our drowsy natures to a desire to be young again, to become one in the ring, to hide and to seek, to pretend to frighten and be frightened, to join the hearty laugh, and run the lengthened race. But in the midst of revelry and fun, accidents, and serious accidents do often occur; and the walls which re-echoed with mirth, now become a dwelling of alarm and sorrow, by an accidental fall of some of the dear little revellers. Perhaps the injury is in the head, and the child is brought to the parents in a state of insensibility. The agonizing feelings of a father and a mother can be well imagined by those who love the infancy of their offspring.

The occasion becomes the more distressing and alarming, ordinarily, from an ignorance in the heads of families how to treat such cases; and the delay which takes place before surgical aid can be procured, may be fatal to the child. It is an important part, therefore, of my labours, to instruct parents on these points, that they be prepared with a knowledge of what is to be done on the instant of the occurrence of a serious accident.

Section XLVIII.

Wounds of the Head.

It will only be necessary to consider two wounds of the head, viz. concussion and fracture.

The first injury is so called from *concutio, to shake together*, by which is meant the effects of external violence, as either obstructs or destroys the function of the brain. The first symptom of this effect is, that the little patient appears to be stunned, and gradually sinks into a state of insensibility; the whole bodily powers, at the same time,

undergoing derangement. The breathing will be difficult, the pulse intermitting, the extremities cold, and in fine the child will appear as if it were on the point of death.

The ordinary practice of former days was to administer violent stimulants. Abernethy was the first to shew the danger of such a course*: for allowing the patient to be aroused from his lethargy, the inflammation which ensued on the brain from this course of treatment almost invariably destroyed the patient. We must bleed, and obtain blood, which we shall often be able to do by instantly placing the patient in a warm bath, as hot as bearable.

Parents of course will be competent to bleed by leeches: four on each side the neck are to be applied, and to be repeated daily; if there should be any symptoms of aberration of mind, or determination to the head, let (after the bleeding) a blister be applied along the spine: this will determine from the cerebral functions. The following mixture will be expedient to keep the bowels regular.

Take of camphor mixture†, six ounces;
Epsom salts, one ounce;
Emetic tartar, one grain.
Mix. Give one table spoonful twice a day.

In fractures of the skull, it will be expedient to shave the head, and ascertain the extent of the injury. Should the child be insensible, with a kind of snorting in breathing, or according to medical language, *stertor*, from the Latin *sterto, to snore*, it is probable that some pieces of bone are pressing on the brain, which if seen are to be removed. In a case of this kind, the same treatment as in concussion will be necessary, with the application of a poultice over the part, taking care that a fine piece of linen, oiled, is placed between the wound and the poultice, and the patient must be laid in a horizontal position: but in event of there being no splinters, but merely a simple fracture, it will be advisable to bring the parts together with common sticking plaster, to bleed, and purge, as in concussion. The diet must of course be low,

* This is the false principle on which the treatment of Cholera has been grounded.

† See No. 3. of Antispasmodics, Section VII.

and the room in which the child lies should be dark, and every precaution taken to prevent noise. I conclude, that parents, in all dangerous cases of this nature, will lose no time in obtaining surgical advice.

SECTION XLIX.

Cuts, or incised Wounds.

Cuts, or incised wounds, are of daily occurrence among children, where they are permitted to play with sharp edged instruments, which, to say the least, is a very imprudent and dangerous indulgence. But it is my task to show parents what is to be done in event of an extensive wound, and in which some artery may be wounded. From an accident of this nature, of course a child might bleed to death. If, therefore, the wound is in the arm or leg, and we find that after every application of compresses and bandages, nothing will stop the bleeding, we may then conclude some important artery is wounded.

In a case of this kind, a parent may make what is called a field tournaquet with a pocket handkerchief. It is to be tied round the arm at the upper part, at the spot of the main artery exhibited in Plate XI. Apply a compress of cloth of about an inch in thickness, rolled tight under the handkerchief; and then a small stick is to be introduced at the knot where it is tied, thus  The stick is then to be twisted round, until the artery is no longer felt at the wrist. The wound can now be washed, and we shall find the bleeding will have ceased; but we must now (if no medical aid is to be obtained) secure the artery, and tie it. Get a large needle, and bend the end at the point, thus  in a kind of hook. Have two or three threads ready, of about a foot in length: these are to be waxed with a wax candle. One person is to hold the needle, while another is to take the thread. We are gradually to untwist the stick, having first opened the edges of the wound.

We shall now see the blood, as the handkerchief is loosened, spout from the mouth of the artery: the moment it is observed, it is to be laid hold of by the hook of the

needle, and the person with the thread is immediately to tie the head of the vessel. If there were fifty, they might all be done in the same way. Care must be taken, however, not to tie any nerve with the artery, as the most violent pain would ensue, if a nerve was included, and probably a lock-jaw. The edges of the wound are now to be brought together with sticking plaster, having first removed the tournaquet, when doubtless all will be well. A wounded artery in the leg is to be secured in the same way: it is to be compressed at about the middle of the inner part of the thigh.

The treatment of incised wounds is simply in bringing the divided parts into apposition by sticking plaster. If they are, however, much lacerated, we shall find the application of poultices highly beneficial; and the child's bowels are to be kept regular with mixture No. 2. of Purgatives, Section V.

The next serious injuries to which children are liable in the limbs are fractures: these are of two kinds, *simple* and *compound*. *Simple* fractures are when the bone is only divided: a *compound* fracture is a division of the bone, with a laceration of the integuments; the bone mostly protruding. In compound fractures, if the bone protrudes, the limb is to be lengthened out by two persons extending the limb with some strength, one person embracing the upper part of the limb, another the lower. If the bone be replaced*, and it is the thigh bone which is broken, it will be the best to bend the knee, as this position relaxes the muscles: splints are then to be applied, and to be fastened at the hip joints, and at the knee, the wounded part being left exposed, so that it may be daily dressed.

The applications must be eight leeches†, to prevent inflammation, and then a poultice is to be applied, and continued until the limb is well. Recovery is generally

* In applying the monosyllable "if" here, I beg to observe, that when a fractured end of a bone much protrudes, it cannot be replaced, and the end is obliged to be sawed off.

† Let it be remembered, that whenever a child faints from bleeding, the leeches are to be removed with salt. Excess of bleeding can always be restrained by dry lint.

in a month with children. The bowels must invariably be kept open by mixture No. 2. of Purgatives, Section V.

It is sometimes difficult to ascertain a simple fracture, as the limb ordinarily swells considerably. We shall ascertain the fact by observing a grating noise when it is handled, distortion, or a certain loss of power of the limb. The bone must be replaced by extension, and the splints applied, as in compound fractures*. The treatment of simple fracture is merely to keep the bowels regular. At other periods, luxations occur of the joints. They are reduced by extending the limbs. If it be the shoulder joint, which is most common, and the joint is felt within the armpit, the arm will be much shortened. To reduce this luxation, let a large pocket handkerchief be carried through the armpit, and the extreme ends tied around a person's neck. Another assistant extending the limb, the person is to raise his neck simultaneously, while another assistant presses in the joint, which is generally reduced with a very loud report.

SECTION L.

Burns and Scalds.

These accidents are also of daily occurrence in families. Either children's clothes take fire, by which they are alarmingly and dangerously burnt, or otherwise boiling water is spilt over them, inducing to equally serious results.

Various are the opinions how to heal extensive burns or scalds. Some recommend refrigerants, others are warm advocates for stimulants: but as few men have had more experience in seeing extensive burns than myself, my opinion may be of some value.

I was at the taking of Hattrass, where was one of the most awful explosions of a magazine of powder, perhaps on record,—At Gurra Kota, at the explosion of a magazine

* Care must be observed that the bandage is not too tight, otherwise the circulation of the blood will be stopped.

—In a mortar battery at Asseerghur, where a similar event took place,—At the explosion of two magazines at different periods, at the powder-works at Allahabad,—And finally in Arracan, where many lives were lost, and many dreadfully burnt, from a fire which occurred in cantonments.

I bestowed, therefore, the utmost attention upon every remedy and advice which was extant, for the treatment of these serious injuries. The result of my practice is a successful mode of treatment.

The immediate effect on the constitution is violent inflammation; the surface (excepting the injured spot) is cold, and the patient has a shivering and chattering of the teeth, almost similar to that of an ague. The pulse is often small and tremulous; the thirst is urgent, and the agony of the sufferer almost beyond description.

The immediate effects are inflammation: this is unquestionable.

The second effects are suppuration.

Our indications to cure, therefore, are to bleed according to the extent of the burn, to repeat that bleeding daily, and to open the bowels with mixture 2. of Purgatives, Section V.

I invariably bleed to syncope, indeed I take from an adult from 40 to 50 ounces. If we thus on the first occurrence use these bold measures, we are ordinarily successful; if not, the suppuration becomes so extensive and alarming, that the patient is often carried off with colliquative diarrhœa: according to the extent of the bleeding, therefore, so is the subsequent suppuration increased or decreased. It depends upon our active depletory measures in the first instance to secure the resolution of inflammation, and thus prevent the danger of the patient sinking from the excessive discharge from the suppurating surface. The best external application is to sprinkle over the whole abraded surface very finely powdered charcoal, and lay over this very fine linen dipped in sweet oil.

With respect to infants, the treatment must be the same. Seven or eight leeches are to be instantly applied over the bowels. If the burn is there, the leeches should

be at the small of the back. We ought as an invariable rule to apply the leeches in an opposite direction to the part affected. The bowels are to be kept regular by mixture 2. of Purgatives, Section V.

In the suppurative stage, it will be necessary to support the patient: we may give a wine glass of Hodgson's pale ale three times a day, and one grain and a half of sulphate of quinine night and morning. Full diet of course.

In common scalds and burns of a trifling nature, the following wash will prove beneficial:

Sugar of lead, two drachms;
Water, six ounces.
Mix. Keep the parts bathed day and night.

SECTION LI.

Ulcers.

I shall not enter into any long description of ulcers, as I conclude all parents will obtain surgical aid, in all instances when these are of a virulent, destructive nature. I shall merely mention, that in those ill-conditioned ulcers which exude much ichorous offensive discharges, the powdered charcoal will have admirable effect. In sores and wounds, where there has been much tendency to putrefaction, I do not know an instance, amidst my extensive practice in field hospitals, of the charcoal failing to remedy.

When there is exuberance of fleshy excrescence growing above the surface, this must be reduced by touching the exuberance with caustic.

I am no advocate for ointments: in India they so soon become rancid, I seldom use them. My favourite remedies are poultices and sticking plaster, or dry lint. In very corroding and fast spreading ulcers, an ointment is sometimes expedient, and this is successful. I allude to the nitrated ointment of quicksilver: this, as in virulent scabby heads, ordinarily has admirable effect.

Let it be remembered, that the condition of an ulcer is

often an index of the state of the constitution. If the condition is bad, the constitution is ordinarily so also.

The best internal remedies are mixture No. 6. of Purgatives, Section V. every other night, and mixture 2. of Purgatives, Section V. every third morning, to effect one or two good dejections; and if the child be much reduced, mixture No. 2. of Tonics, Section VII. will be highly restorative.

Section LII.

Medicines, Tables of Doses, Weights, and Measures.

The following medicine will be required by such parents who are inclined to adopt my work as their family guide. I propose that a convenient medicine chest should be constructed for this purpose. It will be found that I have even included instruments in my list. It is of importance, that, in a country like India, where disease is so suddenly fatal, every family should have them, that a medical man may not procrastinate in sending to his home, or to a dispensary. There is no event in life, where procrastination may be so fatal, as in this. Another important point is to be borne in remembrance, that the formula of the preparation of various medicines differ in different colleges; and perhaps a chemist's shop may possess medicine composed of the formula of each. A prescription may, therefore, be prepared quite in opposition to the prescriber's views. The colleges who have issued their different Pharmacopœias are the Dublin, Edinburgh, and London; and as each have their different proportions and ways of preparation, it became a matter of importance for physicians, in prescribing, to distinguish the college whose Pharmacopœia they intended to follow. Thus, if they required Tinct. of rhubarb, they would put opposite the name of the college thus:

Tinct. of rhubarb. (Ph. Lond.)
Tinct. of rhubarb. (Ph. Edin.)
Tinct. of rhubarb. (Ph. Dub.)

The manner of forming Tinctures in these different colleges differed so much, that it was indispensable to make this distinction: for instance, we will merely consider one preparation, and which is a very important one, viz. Tincture of Opium, or laudanum preparation.

THE EDINBURGH.

Take of opium, two ounces;
Diluted alcohol, two pounds.

DUBLIN.

Take of purified opium in powder, ten drachms;
Proof spirit, one pint.

LONDON.

Hard opium, two ounces and a half;
Proof spirit, two pints.

So that both the London and the Dublin are half an ounce, or one fifth stronger than the Edinburgh, which is an amazing difference. The Dublin is still stronger than that of London, since the opium used is purified, and in powder.

In prescribing, an ignorance of this fact, therefore, might prove of serious consequence; and it is very much to be lamented that the British legislature does not prevent this distinction, by directing that the formula of one college only should be dispensed by chemists and druggists*. The medicine which I prescribe is after the London formula.

Another point of importance to which I beg to draw the attention of my readers, is the method of measuring, especially to regulate the size of the drop. If drops were formed from the mouth of a large bottle, they would be proportionably as great again as when dropped from one that is small. Suppose I prescribe sixty drops of laudanum, I expect, of course, that they will be dropped from a small neck bottle; the ordinary size is from that of a two ounce phial. On the contrary, if it be dropped from the neck of a two pound bottle, it would give one hundred and twen-

* Viewing this subject in the important light it deserves, I called upon Frith and Gordon, chemists and druggists of Calcutta, and begged of them to prepare medicine after my prescriptions. These gentlemen at the same time will have medicine chests for sale, containing the articles mentioned in this work.

ty drops. This serious mistake occurred in London. A physician of eminence prescribed for a lady, a draught to be composed of sixty drops of laudanum in two ounces of water. When he called upon his patient the next morning, he found her in an alarming state of stupor. He hastened to the chemist's shop, and ascertained that the laudanum had been dropped from a large bottle, and that his patient had swallowed 120 drops instead of 60.

Among the articles I recommend, therefore, in the following list, I have ordered a minimum, or drop glass, which will give the quantum according to my prescriptions.

The quantity of medicine is specified which families will require.

Sub-Carbonate of Potash, eight ounces.
Oil of Peppermint, one ounce.
Magnesia, one pound.
Calomel, four ounces.
Castor Oil, three bottles.
Jalap, three ounces.
Epsom Salts, eight pounds.
Senna, five pounds.
Spirits of Turpentine, eight ounces.
Electuary of Catechu, one ounce.
Prepared Chalk, half a pound.
Tincture of Opium, four ounces.
Rhubarb, four ounces.
Powder of Antimony, half an ounce.
Tartarized Antimony, or } three ounces.
Emetic Tartar, }
Powder of Squills, one ounce.
Quicksilver, one ounce.
Digitalis in powder, one ounce.
——— in tincture, one ounce.
Caustic, one drachm.
Gum Arabic, three ounces.
Balsam of Copaiba, three ounces.
Tinct. of Henbane, one ounce.
——— of Valerian, one ounce.
Powder of Chalk with Mercury, half an ounce.
Sulphate of Quinine, half an ounce.
Cayene Pepper, half an ounce.
Aloes Soc. four ounces.
Borax, half an ounce.

Ipecacuanha, one ounce.
Concrete Citric Acid, one ounce.
Camphor, three ounces.
Carbonate of Ammonia, one ounce.
Distilled Vinegar, one pound.
Powder of Bark, eight ounces.
Colombo Powder, four ounces.
Tincture of Cardamoms, two ounces.
——— of Bark, two ounces.
Vinegar of Squills, two ounces.
Acetate of Potash, one ounce.
Rectified Spirits of Wine, one pound.
Leaves of Digitalis, one ounce.
Carbonate of Iron, six ounces.
Dover's Powder, two ounces.
Gum-ammoniacum, one ounce.
Ointment of Nitrate of Quicksilver, four ounces.
Ointment, mercurial, six ounces.
Blistering Plaster, five ounces.

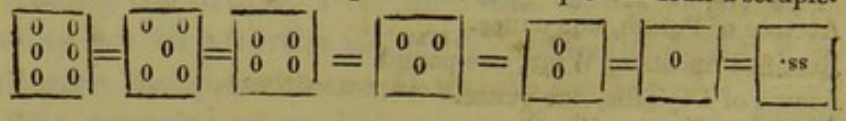
INSTRUMENTS.

A glass to draw off the milk.
A seton needle.
Two gum lancets.
One bleeding ditto.
Scales and weights.
Pestle and mortar.
One ounce graduated measure.
Drop graduated measure.
Slab.
Spatula.
An enema syringe.
One pound of lint.
Eight ounces of adhesive plaster.

END OF PART THIRD.

TABLES.

℔ i.	℥ i.	ʒ ii.	ʒ i.
One pound. =	One ounce. =	Two drachms. =	One drachm.
ʒ ss.	℈ ii.	℈ i.	℈ ss.
Half a drachm. =	Two scruples. =	One scruple. =	Half a scruple.



6 grs. 5 grs. 4 grs. 3 grs. 2 grs. 1 gr. Half gr.

One pound.	Ounces.	Drachms.	Scruples.	Grains.
℔. 1	12	96	288	5760
	℥ i.	8	24	480
		ʒ i.	3	60
			℈ i.	20

Table by which to regulate Doses.

Age.		Proportional dose, 1.	Absolute dose, one drachm.	
Weeks	7	$\frac{1}{13}$	Grains	4
Months	7	..... $\frac{1}{12}$	Grains	5
	14	..... $\frac{1}{6}$	ditto	10
	28	..... $\frac{1}{3}$	ditto	12

The following is more explicit.

Ages.	Proportionate quantities.		Doses.
For an adult.	Suppose the dose to be	One.	or 1 drachm.
Under 1 year	Will require only	$\frac{1}{12}$	five grains.
2	.....	$\frac{1}{6}$	ten grains.
3	.....	$\frac{1}{3}$	twelve grains.
4	.....	$\frac{1}{4}$	fifteen grains.

PART IV.

PREVENTION OF DISEASE IN INFANCY.

Section I.

Preliminary Observations.

It must be evident to my fair readers, that I ascribe the grand cause of diseases in infancy to irritation, according to the violence of which depends the extent of disease; and that this irritation is produced during the process of teething. The effect of this irritability is suppression of the perspirable matter of the body, determining that which ought to be expelled by the surface, to the most important internal organs. According to the extent of suppression, so is the degree of disease. I acknowledge that other causes may aggravate this irritability during dentition, the principal of which are climate, dress, diet, and the natural passions. I shall, therefore, restrict myself to the consideration of these, as being sufficient to elucidate the extent of my opinions on the morbid causes acting on the infant constitution.

I shall therefore consider the subject of prevention under four heads, viz.

I. Dentition.—How to prevent irritation during that process.

II. Dress and Diet.—What kind may be considered as preventive.

III. Climate.—Which is the most congenial, and is preventive of irritability.

IV. Natural Passions.—How to guard against them as a source of excitement; and conclude with some observations on bathing, exercise, and weaning, as connected with the prevention of disease.

SECTION II.

How to prevent difficult Dentition.

My historical description of dentition will fully satisfy my readers, that I do not wish to impose solely my opinions upon them; I have quoted those of the most able authors who have written upon the subject. It is acknowledged, that there is a great difference of opinion on this subject, among professional men. I have never had, however, occasion to alter the one I have formed; and as I have laid the foundation of my treatment, in a great measure, upon it, and have found it successful, I have reason to believe that the opinion is not groundless. Besides, as I shall have occasion to show, I am strengthened by the concurrent testimony of the most experienced practitioners in Europe in the course which I adopt.

It is evident that difficult dentition is ascribable to the length of the period they take in appearing, and to tensity of the gums. The irritability excited thereby is, in my opinion, to be ascribed to an irritated state of a fine nervous expansion seated at the root of the teeth*, being formed by the nerve that extends to the tooth, in a similar manner as the retina is an expansion of the optic nerve. My reasons for this opinion are: 1st, The least cold water applied to the teeth excites pain, and the application of cold generally induces tooth-ache: this establishes the position, that there exist in the teeth a susceptibility to nervous excitement. 2dly, That it is not actually seated in the nerve of the tooth; because by extracting it the pain is removed, where at the same time we leave the nerve in the alveolar process†; so that, were it seated in the nerve, the pain would remain. 3dly, That it is not the membrane which covers the external upper part of the tooth: otherwise the excitement which the teeth receive from cleaning and eating, would occasion tooth-ache. 4thly, That is not in the texture of the tooth is evident, as we may break any part of the anterior

* See plate representing the teeth.

† From *alveus*, a channel; the socket in which the human teeth are set.

portion of it without exciting the least pain. 5thly, The nervous expansion in question is plainly seen covering the root, and is vascular like the retina; but it does not extend to the crown, which in fact is senseless. I have no doubt this excitement produces considerable inflammation of the tooth, as it is very remarkable that the teeth are exceedingly vascular*. 6thly, It is only when decay takes place in the adult, which is the (suppuration ?) on the expansion in question, opening a communication with the external air, together with pressure during this irritability, that tooth-ache is caused. 7thly, The decayed tooth becomes loose, and when it is pressed down the pain is intense†, which is ascribable to the pressure on this nervous expansion. But if the decay is of old standing, the nervous expansion may have been destroyed, which will account for pain not being felt in decayed teeth of long standing. This is something like a case of Gutta Serena; where the retina is decayed, the consequence is loss of vision and sensibility in the eye. But a tooth may only be partially decayed, and the membrane be protected from external communication, and yet, if cold be applied, it will reproduce inflammatory and nervous irritability.

If the foregoing reasons be just, difficult dentition must be ascribed to the tightness of the gum upon the teeth, as they are propelling themselves through it; during which operation, the nervous expansion becomes irritated and inflamed. This tension and pain are not experienced in those teeth which are already through, nor on other parts of the gum, where the operation of cutting, or growth, are not present. They are only there at the period of cutting, and arise from the resistance of the gums to the growth of the teeth, which causes a pressure on the irritated and inflamed nervous expansion. For instance, I have a boil on my hand, and the skin is much inflamed: the matter, by increasing, distends the

* See plate representing the teeth.

† Let any one with the tooth-ache endeavour to press the tooth down, and I am confident excessive pain will be felt. When young, I was a great martyr to this suffering, and remember well the torment of pressure.

inflamed skin to the utmost stretch: the skin being thus pressed upon by the matter, pain ensues: remove the matter, and the pressure is removed from the inflamed skin, and also the cause of pain. The adjacent skin, however, not being inflamed, has no morbid pressure, is free from any irritation, and we may press and rub it without a sense of pain. According to the pressure on this irritated nervous expansion, is the degree of irritability on the constitution excited, even to the height of producing those diseases which I have enumerated in the second part of this work. With these premises, our means of prevention are at once indicated; viz.

1st. Remove the pressure: this is to be effected by lancing the gums. Here the effect produced is similar to removing matter from an inflamed skin. It will have appeared from what I have already advanced, that I do not ascribe any important function to the gums; indeed, they are a firm substance, almost cartilage, which is best fitted to retain in its position so solid a body as a tooth. They are senseless, and you may cut them in any way, and no injury will be done. In extracting teeth, they are often considerably lacerated and torn, but without any bad consequences. In gunshot wounds, I have seen them much lacerated without any ill effects. This cannot be said of any other part of the body. If muscle be lacerated and torn, it inflames and suppurates; if bone be broken or shattered, the consequences are serious; and indeed, if any other part of the body be injured in a similar manner to the gums, the most dangerous consequences follow: but this substance heals, and forms again without any intervention of art. The only cause of ulceration and disease of the gums is acrid matter emitted in vapour from the stomach, such as mercury or acid; but remove the cause, and the gums, without any local application, will heal and recover. A child will bear the greatest pressure on the gums from hard substance or from friction, without suffering pain, and for any length of time, when the nervous expansion on the eeth alluded to is not in a state of irritation, which cannot be said of other parts of the body. Yet it is not unu-

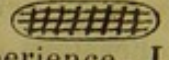
sual to hear,—"O, my dear Sir! do not touch the gums! they are so tender! I beg and pray you will not! The poor dear little thing will fall into fits! it is dreadful! the sufferings of the poor little dear! the gums are so exceedingly tender!" But while at other times the child will scream on the attempt to introduce the finger, if the teeth are about appearing, and especially when the gums are touched, it is from an apprehension of pressure, which, increasing the tensity of gum over a cutting tooth, occasions that violent pain which the child dreads. Pass a lancet through the gums, and then mark the relief*. A little friction on the gums, which moistens and relaxes them, will often induce delight instead of dread. It is the pressure on the tooth which affects the nervous expansion, while in a state of excitement; that induces the pain. If the thumb be passed all along the gums, where the operation of cutting may be going on, the pressure from that part which is over the cutting tooth is often much lessened; this accounts for the anxiety of the child for that equilibrium of pressure all along the gums, which he exhibits by the constant voluntary effort to press the gums together, and by the unceasing application of his little hands to his mouth†.

I trust the foregoing will satisfy my readers, that there is nothing to alarm them in cutting the gums. Indeed, if the whole upper surface were removed, no injury would ensue, nor would the children feel the pain of the lancet in the gums; they are often too hard to communicate pain. It is essential to establish this point; as I consider lancing the gums as much preventive of diffi-

* If any of my readers have experienced a painful gum-boil, they will be satisfied on the nature of this pressure. I have seen persons with gum-boils in the most agonizing sufferings; the whole face swelling, and the neck rigid; but the moment the bile is opened with a lancet, by which the pressure of matter is removed from this nervous expansion, the pain ceases.

† We especially feel this desire to rub the adjacent margin of an angry boil with our own hands, because we can moderate our touch according to the sensation we produce; but if another were to perform this office for us, we should tremble lest his touch become greater than we could bear. It is precisely the same with a child, who dreads the introduction of another's finger, while its own is always directed to the part affected.

cult dentition, as the amputation of a shattered limb is of mortification. The neglect of either is often fatal.

The first thing to be done when a child is irritable and peevish, restless, and the skin hot, is to lance the gums deeply by an incision, thus  the whole length of the row which may be coming through, and the incision must be long and bold. In lancing the gums for double teeth, it will often be necessary to cut longitudinally as well as diagonally, at the same time, thus 

It is astonishing what relief a child will experience. I have often seen them cross, peevish, and screaming, yet immediately after the operation, smile and appear delighted; and it is not unusual to find a child in convulsions, instantly recover after a good lancing of the gums, and fall into sound and refreshing sleep. The operation is simple, and every mother is capable of performing it. I heard of an instance, however, the other day, of a child dying after the operation of lancing, from having bled to death. The story has been related to me in so many ways, that I cannot conceive otherwise than that the death was ascribable to something else. The surgeon who performed the operation stands high in medical repute; and as I was told the occurrence, it appears that he was not permitted to see the child after the lancing had been performed. However, be this as it may, I mention the event, as it was soon over India, and every mother took the alarm. Among all the children whose gums I have lanced, there never has been an excess of bleeding. The gums are the reverse of being filled with arteries, and of being vascular; and I cannot conceive how such an accident could have taken place; indeed, the relief to the child would be more manifest, if we could obtain generally a greater quantity of blood. Excess of bleeding in such cases, is a fact scarcely on record. I remember reading some author on this subject of dentition, who mentions, that he had heard a report similar to the above; and takes the opportunity of asserting, that out of the many hundreds he had lanced, not the slightest disposition to excess of bleeding had occurred.

It is not unusual for ladies to lance their own children's gums. A patient of mine was proceeding down the river Ganges three years since. She had with her a little infant daughter, whose teeth were cutting. I had warned this lady of the necessity of lancing, in event of the child becoming unwell. This occurred, and the lady, without hesitation, (though the first time and alone,) boldly lanced the whole of the gums. The infant immediately recovered, and I believe, had no return of fretfulness, otherwise I know the operation would have been repeated.

Children who are old enough are sensible of the comfort and ease which lancing affords. A gentleman of the civil service told me the other day, that a little girl of his, about two years of age, who was cutting her double teeth, came running to him one morning, and pointed to her gums, showed, by the action of her finger, her desire to have them lanced. He instantly took his penknife and opened the gums, to the great relief and satisfaction of the child, who, as occasion required, repeated the request.

An officer of the artillery one day exultingly told me of his success in lancing his children's gums, and of his firm belief, that he had been the means of saving their lives by performing the operation on the instant, as danger would have ensued, had he always waited the arrival of surgical assistance. He added, that one day he and his family were out dining, when a servant came into the room, informing him that his infant was in convulsions. He immediately hastened home, immersed the child, while yet in alarming convulsions, in a hot bath, and lanced the whole of the gums, before the medical attendant arrived; consequently the child had recovered, and was sound asleep in bed. Had not the gums been lanced thus opportunely, the repetition of the convulsions would, no doubt, have killed the child, as medical aid might have been too late, which is not uncommon. This shows the importance of every parent having sufficient confidence to perform this simple operation.

At a station to which I was attached for some years, my duties were so extensive, that, having many children at the time under my care who were residing at a distance from each other, I made it a practice to call every other morning and lance their gums, in case my attendance should be elsewhere pre-engaged when the children might be attacked with convulsions. The precaution proved to be beneficial; and it was not unusual for parents to mention, that the day of lancing, the children were cheerful, whereas on the intermediate day, they were invariably peevish.

The process of dentition is exceedingly curious. It has been supposed that the teeth form in the alveolar process, and when formed, proceed progressively through the gums; but this is not the case. They unquestionably grow, or gradually increase in size; and in this progressive formation, the gums become more and more distended, until by the resisting power of the gums, a pressure takes place upon the nervous expansion before mentioned.

The following is a curious instance of the growth of teeth. Some young ladies informed me the other day, that they had procured some little squirrels, which had become interestingly playful and tame; but they could not help feeling apprehension from the exceeding sharpness and length of their teeth: they therefore determined to cut them, which they did with their scissors, close to the surface of the gums; but to their great astonishment, they grew again in a few days, to their usual length and sharpness; and though the operation was often repeated, it did not prevent their reproduction. I saw the operation performed myself on one of these little animals.

Mr. Hunter is very particular in describing the manner of the formation and growth of the teeth in the fœtus*. He says: "The alveolar process appears about the fourth month, only as a shallow longitudinal groove, divided by slight ridges, into a number of intermediate depressions, which are to be the future alveoli or sock-

* Infant before birth.

ets. These depressions are at first filled with small pulpy substances, included in a vascular membrane; and these pulpy substances are the rudiments of the teeth. As these advance in their growth, the alveolar processes become gradually more completely formed. The surface of the pulp first begins to harden, the ossification proceeding from one or more points, according to the kind of tooth that is to be formed. As the ossification advances, the whole of the pulp is gradually covered with bone, excepting its under surface, and then the fang begins to be formed. Soon after the formation of this bony part, the tooth begins to be incrusted with its enamel, but in what manner it is not easy to explain. It gradually forms upon the surface of the bony part, and continues to increase in thickness, especially at the points and basis of the tooth, till some time before the tooth begins to pass through the gum; and when this happens, the enamel seems to be as hard as it is afterwards; so that the air does not appear to have the least effect in hardening it, as it has been sometimes supposed. While the enamel is thus forming, the lower part of the pulp is gradually lengthened out, and ossified so as to form the fang. As the fangs of the teeth are formed, the upper part is gradually pushed upwards, till at length, about the seventh, eighth, or ninth month after birth, the incisores, which are the first formed, begin to pass through the gums." * * * * "These twenty teeth are called the temporary, or milk teeth, because they are all shed between the age of seven and fourteen, and are supplied by others of a finer texture, with larger fangs, which remain till they become affected with disease, or fall out in old age. All these permanent teeth are formed in a distinct set of alveoli, so that it is not by the growing of one tooth under another in the same socket, that the uppermost tooth is gradually pushed out, as is commonly imagined; but the temporary tooth, and those which succeed them, being placed in separate alveoli, the upper sockets gradually disappear, as the under ones increase in size, till at length the teeth they contain, having no longer any support, consequently fall out."

From the foregoing, the only conclusion respecting the treatment is, that in many cases, the irritability may occur either from the rapid growth, or the superabundance of ossified matter which forms the tooth. I remember attending a fine girl, who had not commenced cutting her teeth until she was nearly 10 months old; but they were larger than any adult's I ever witnessed; the infant's sufferings were indescribable, and in a few days she was greatly reduced; but the lancing, in her case, was always like an opiate lulling pain; she instantly found relief.

All men of experience, indeed, advocate lancing. Dr. Underwood observes: "When it is found necessary to lance the gums, (which is ever at least a safe operation,) it should always be done effectually with a proper gum-lancet, that both the gum and the strong membrane that covers the teeth may be sufficiently divided. The lancet should always be carried quite down to them, and even drawn across the double teeth. It is certain, that this little operation gives scarcely any pain, and the relief is at the same time often so considerable, that the child appears exceedingly pleased with it, and will immediately afterwards squeeze the jaws and grind them together forcibly, which proves that the gums are not very sensible. The most painful part of dentition, and that in which children are most exposed to convulsions, is usually from the teeth cutting through the periosteum. This, I apprehend, in difficult dentition, is not cut through; but is forced up before the teeth, when these are even in sight under their gums: hence it is, that cutting through the gums is often so very useful, and takes off fever and convulsions, which severe symptoms could not arise merely from the teeth piercing the gums, which parts, it has been said, are not very sensible. At other times, the pain and fever seem to arise from almost the very first shooting of the teeth within the jaw, and then they will often not appear for some weeks after the gums have been properly lanced, and parents are therefore apt to conclude the lancing has been unnecessary, if not improper. I am, however, convinced, from

experience, that this little operation, though not in the general esteem it ought to be, (and by the French Physicians perfectly dreaded even to this day,) is often inexpressibly useful, and appears to have saved many lives, after the most dangerous symptoms had taken place, and every other mean of cure had been made use of. The mere bleeding from the gums is capable of affording some relief, as it is frequently found to do in adult persons distressed with the tooth-ache; and I cannot here forbear expressing my surprise at the fears some people entertain of lancing the gums, and then delaying it too long, if not altogether rejecting it, though no evil can possibly arise from the operation. On the other hand, its advantages are so great, that whenever convulsions take place, about the usual period of dentition, recourse ought always to be had to it, after an unsuccessful use of other means, although by an examination of the gums there may be no certain evidence of the convulsions arising from such cause: the irritation from teething, it has been remarked, sometimes taking place in a very early stage of dentition. At any rate, (it is repeated,) the operation can do no harm, even at any period; and should the shooting of teeth be only an aggravation to the true cause of the disease, lancing the gums must be attended with advantage. But should teething be the proper and sole cause, it is evident how fruitless any other means of relief must frequently be. For, should convulsions take place, for instance, from a thorn run into the finger or toe, the proper indication of cure, by an immediate extraction of the thorn, and the probable futility of other means, would be equally obvious. The operation may also be safely repeated, the scars doing no kind of harm. This, however, contrary to popular prejudice, may be very evident, not only from the fact of infants cutting their first teeth very easily some weeks after being lanced, but also from the circumstances under which the second teeth are often cut. At this period children, from their more advanced age and decreased irritability, are less subject to fever, and evidently appear

to suffer far less pain than in the first teething, though the second teeth often have to make their way through much more considerable scars than have been made by a lancet, from the gums having been lanced prematurely. This fact is likewise established from the many instances in which dentists have thought it expedient to draw out the first teeth long before the second are prepared to take their place. The objection to lancing the gums from any apprehension arising from the scars, is, therefore, altogether unfounded; and, indeed, it will be frequently necessary to lance the gums several times, as before remarked, especially on account of the extraordinary difficulty with which some infants cut their double teeth, which are furnished with two or more knobs or points. Purging, fever, and even convulsions will sometimes occur from only one point of a large tooth offending the periosteum that covers it; and being nearer the surface than the other points, the lancet may sometimes not completely divide the membrane that is over the rest, (or it is afterwards healed,) and this part not being injured by the tooth, the symptoms subside on having divided the portion of membrane that was inflamed. But in a little time another point of the same tooth is found to irritate the periosteum, and calls for the like assistance of the lancet, which again removes all the complaints. This, at least, I have conceived to be the process, when I have found lancing a large tooth immediately remove every terrible symptom, though the fever and other complaints have returned, and the whole of the tooth has not appeared till the operation has been three or four times repeated. I have seen the like good effect from it, when children have been cutting a number of teeth in succession, and have bred them all with convulsions, while nothing relieved or prevented these terrible symptoms but lancing the gums, which removed them every time it was done, one or more teeth appearing a day or two after each operation."

The following is from a very ancient work, but is highly interesting from the true practical intelligence it exhibits.

"The wife of the late Mr. Storer, in Basinghall Street, having had several children, consulted me for a child of about two years old, after a variety of remedies tried in vain, and too near its death to expect success from opening the gums, was determined, on any future occasion, to apply more in time for the benefit of it. Accordingly, having a boy at nurse, at Kensington gravel pits, in December 1729, of six months old, and having received advice of its being dangerously ill of a vehement cough night and day, with great restlessness, sharp cries and startings, she went, of her own mind, resolving to have his gums cut, and called on a near relation at Kensington, with design to have taken a surgeon from thence; but meeting with such obstruction herein, she was recommended to a midwife, who was said to have skill in performances of this kind, who going with her to the child, told her that the gums did not want this means, neither would it do any good; but directed the nurse to procure some remedies she named, and being paid for her visit, was discharged. The nurse and relation also were much against opening; the former especially terrified the mother. The infant growing much worse, on the 22d of December, she took him home, and at night sent for me, when both the nurse and the father of the child (who was inclined to the same sentiments) were gone out. I then opened the middle incisors of each jaw. Next morning, the mother, before she spoke of what had been done, enquired how the child was? when nurse told her he had slept much better than he had done a great while, and supposed her mistress had given him something to procure rest; but she perceived that he did not take the bubby so readily as he used to do. 'Pish!' said the mother, 'that's nothing, but from a little tenderness of the gums, which I got opened last night, when you were out of the way.' The nurse hearing this, flew into a passion, and swore she had killed the child, and had she known it, no temptation should have prevailed with her to have laid with him all night by herself. In respect to the troublesome cough, I directed a grateful linctus; but this child refused all medicine. He was sent back, how-

even, at the latter end of the week, perfectly well, and so continued. It was three months after the incision of the gums, before any teeth came out, when the two under middle incisors appeared, without any seeming trouble to the child. On the 24th of July, being now taken from the nurse, Mrs. Storer desired I would come again, and open his gums, she finding him grow very ill, and restless as before. At this time I made an incision on the four upper incisors only, not perceiving any further need, the two middlemost of which came out in a few days; but she complaining that the child was still restless in the night time, and swate profusely, I enquired into the condition of his night-clothing, and was surprised to find that he was still laid in two blankets, and that in the same manner as he had been in the winter season, though it was now the hottest part of the summer. I advised, therefore, that he should be gradually reduced to a thin covering, and be laid in a bed,instead of a cradle; which being done, the child became free from these troublesome sweats, and recovered strength without further means, continuing till September 10th, when I was a third time sent for about ten at night, the child being in great trouble, and crying in a most violent manner, and not able to sleep. I now found the first molares swollen, and opened over them, with the lesser teeth; after which he had a quiet night, and remained easy next day: but seeing him again on the 14th instant, and his mother telling me that he did still now and then thrust his hand into his mouth, as though under some uneasiness, I ordered him to be laid into the lap, and viewing the gums, I saw I had not opened far enough back over the molares, (which under the blood I could not so well discern by candle light,) though sufficient to give relief at that time. I therefore extended the incision, and taking this opportunity, passed over all anew, and by this means procured perfect ease, the gums bleeding rather more now than on the 10th. But the mother complaining after this of the thin, watery stools, and of his being very subject to them, I inquired into the order of his diet, and was told she gave him any thing he liked; such as meat, cheese, strong

liquors, and cucumbers in a large quantity, and that he would eat pepper with this to a degree hardly to be credited. I now made her sensible of the necessity she lay under of regulating his diet, and as much as possible, she might prevent those evils, for the cure of which she could get him to take so little medicine, when brought upon him; and he was no sooner put under a right regimen, than the good effects of it became visible in the better condition of his stools.

"October the 16th. Calling to see the mother herself, I found this child brisk and well; and passing my finger over all the gums, I felt them cool and soft, but none of the last mentioned teeth come out. Thus far I thought proper to give particulars, for the direction of practice. It may suffice to mention, that in the course of his teeth, he had many fits of illness arising from a wretched constitution, and some culpable indulgences. At about a fortnight old, after four or five days indisposition, he fell into strong convulsions, and lay as dead for three days, out of which he was recovered by juice of rue sweetened; but he lost the use of his left side for a time, that arm being drawn backward, the hand of which remains impotent to this day, being now a dozen years old. This natural weakness made him apt to take cold: a very little alteration of air would affect him, and sometimes occasion hoarseness, on all which accounts I had no little trouble with him: however, having the mother's free consent to the opening his gums, (and the father's too, after some experience,) whenever I thought convenient, and finding renewed occasions for it, I took care betimes to prevent the rise of mischief from this quarter; and I think, without the repeated assistance of this remedy, we should scarce have been able to have carried this child through his teeth, which he completed in about two years and a half." * * * * "We shall not contend for infallibility; but as to those precepts which forbid early incision of the gums of infants, in distress with their teeth, and at all times, before they are ready to come out, as unwarrantable proceedings, and teach that they are not only ineffectual to any good purpose, but highly injurious to children, by rendering the progress of the teeth afterwards

through the closed gum more difficult and painful, and consequently more hazardous to life, we must in tender pity to infants, pronounce them erroneous, and by the authority of good experience, pass this sort of sentence upon them."

There is much practical truth in the foregoing case; it shows how ancient the prejudice against lancing the gums, and the difficulty the author experienced in acting up to the dictates of his experience and judgment. He concludes his treatise with the following extraordinary case of difficult dentition in an elephant:

"In the year 1734, Mr. John Savage, late of the Council at Bencoolen, in the East-Indies, came over to England with his family in the ship Harrington, Captain Jenkins, commander, and were for some time after their arrival at my house. They brought with them, through a passage of six months, a female infant, who at the time of their landing here, was but ten months old; which within a little while was placed under Mrs. Peach, at Harrow-on-the-Hill, who had the bringing up of several Indian children. Mrs. Savage, soon after this, speaking of the provision she had made for the child's teething, by carrying down one of the famed necklaces, I took occasion to joke with her about this bauble, when the discourse turned upon a considerable misfortune that had befel Mr. Savage, in coming over, by the loss of a young elephant, which died of his teeth on board the ship, which could not but make her thoughtful about her little one. Mr. Savage himself confirmed the same, and appealed to Mr. Coaty, the Surgeon of the said ship, for some of the particulars, who best knew the manner of it. Mr. Coaty making several visits to these his friends, and dining at my house occasionally with them, gave me an opportunity of receiving much satisfaction about an accident, the rarity of which, I confess, led me curiously to inquire into its truth and circumstances. This young elephant was the property of Mr. Savage, and designed by him to have been transported to England; but after having been some time at sea, the man that had the care of him,

observed that he grew much indisposed, and went into a great purging, of which he gave notice, who was then directed to alter his diet, by taking him entirely off from coarse sugar, of which he often ate before, and to keep him strictly on rice; but his illness, notwithstanding all care, increased upon him, so that he fell by degrees quite off his stomach, and about twelve or fourteen days before he died, was exceeding bad, having had convulsive symptoms. He would often moan, before they knew the cause, and put the end of his trunk into his mouth, and rub and rake his gums: he coveted also to rub his gums against any thing he could; for which end he would often turn his trunk over his head, open his mouth, and seemed pleased to have any body to rub them. About four or five days before he died, they perceived he had just cut a tooth, which they judged had not been out above twenty-four hours. Encouraged by the sight of this, they opened the gum of the other side, which was tumefied very much, which let out a large quantity of fœtid pus. They then made incision on the side where the tooth broke through, which was likewise swelled, from whence also they had a great discharge. After death, the Surgeon, with the assistance of others, examined the mouth, and found large abscesses, the matter of which had made its way under the periosteum of the jaw, and in some places by its acrimony seemed to have affected the bone; and he expressly told me, he did believe the cutting of the teeth to have been the cause of this young elephant's death. He died much convulsed. I inquired what teeth he had, and concerning his age. They said he had some teeth, but did not particularly note how many. They apprehended those he died of might be his tusks, and supposed him to be fourteen months old; but of these they could not be certain."

I have thus made the above extracts for the satisfaction of my readers. I could make other quotations to establish the beneficial effects of lancing the gums in difficult dentition; but I trust that I have said enough, and that it will be received as an established fact, that lancing the gums, when the child is the least fractious, is indis-

pensably necessary; and that, as a preliminary measure in the treatment of all diseases, the lancet is to be first used with boldness; and I have no doubt, with the blessing of God, that many an anxious moment will be spared to affectionate parents, as well as hours and days of pain to suffering infancy.

I shall now proceed to another preventive of difficult dentition.

SECTION III.

Excitement of Counter Irritation.

It will have occurred to my fair readers, that those diseases which I have mentioned as inflammatory, generally terminate in the formation of matter, or abscess; and febrile and other affections; in eruption on the skin, or discharges by the bowels. This is a proof of the means which nature adopts for the removal of diseases. During the process of dentition, therefore, a child is affected with a scabby head, or discharges behind the ears, or by a looseness of the bowels; all which effects are preventive of difficult dentition, when kept within proper limits; and when the discharges, thus produced, are so regulated as to prevent degeneracy into ichor or fœtor, that is to say, corruptible matter. Science has substituted such artificial means as setons, issues, blisters, tartar emetic frictions, &c. and all these may be used with little inconvenience to the child, and often with astonishing success; in short, they are the principal means of bringing a child safely through the teething period. I have enlarged before on the danger of checking eruptions, healing sores, or removing discharges. But there are no cases in which attention is more immediately required, both to regard, as a healthy process, all external, cutaneous eruptions and discharges, and to regulate them in a manner to prevent them from becoming malignant.

If I were called to see a child in convulsions, I should, in the first place, examine the teeth, and lance them,

and while the other remedies were preparing, ascertain whether it had been subject to eruptions, scald-head, or tumour in any part of the body; if so, and they had been repelled, I should have every reason to ascribe the convulsions to repulsion, and my attempts would be instantly directed to produce an artificial eruption by the tartar emetic ointment.

If I were, on the other hand, called to an infant evidently suffering under a fever, either from the virulency of a scald-head, or confluent eruption of an irritative nature, I should in either case apply a seton, or an issue behind the ear, or at the back of the neck; produce an artificial discharge of matter, and heal the eruptions with the nitrated ointment of mercury.

Again, if I were called to a child, and found my little patient suffering from inflated bowels, hot parched skin, dry tongue, and burning forehead, and should ascertain that the infant had never been liable to eruptions or scald-head, I should inquire whether the child had recently suffered from looseness in the bowels; and if so, I should ascribe the suppression of the alvine dejections to this cause, and instantly recommend mixture Section No. 2. of Purgatives to be given until these discharges were reproduced.

If I were called to a child who was absolutely sinking from an unceasing run from the bowels, I should apply a blister over the abdomen, and gradually moderate that discharge with mixture Section VII. No 2. of Astringents, but not suddenly suppress it.

The above is the course which is to be discriminately observed. We are to watch the constitution, the habit, and probable effort of nature.

Having shown this grand outline of preventive means deduced from the historical character of disease, as described in the second part of the work, I shall proceed now to support it, not by logical inference, but by practical facts. The eminent medical author from whom, in the preceding section, I have quoted, has some cases precisely adapted to the present subject, which are both interesting and illustrative. His style is quaint and

plain, but highly acceptable, on account of the information which it conveys as the result of his experience.

CASE.—"The latter end of August, I was sent for to make an issue for a little girl, the daughter of a gentleman of the bank, and at the same time to be advised with about her head, which, having broke out, and been drawn with an oil-skin, largely extended, was become exceeding sore, the excoriation being spread over the fore-part of the head from ear to ear; from whence had flowed down so much corrosive humour, that the skin of the neck, above the clavicle* on one side, was ulcerated with it. The back part of the head, and neck down to the shoulders, were at the same time beset with many hot ruddy pustules, looking scurfy or crusty in their tops through heat; together with all which, I found her about teething, she having four double ones lying much swelled; and from such maladies together, she seemed highly grieved, being feverish, and very restless.

"Being now submitted to my care, I at first proposed to open the gums, as highly expedient in this case for alleviating the symptoms; but perceived the father fearful of it: however, having satisfied his scruples, I was permitted to do it; and having made an issue for diverting the humour, I then proceeded in the cure, and in about eight days time the child was so well recovered, as to pay a visit to her grandfather at Hoxton: within which space also, the aforesaid teeth came all out, to the no small conviction of the father, that our success had been much forwarded thereby; and it was observable, that upon the next illness of this child, when she was about her eye-teeth, he left express word, that if I thought proper to open the gums, he was very free for it.

"The external remedies used here, were cloths wrung out of a fomentation of the Flor. Sambuc† decocted in milk; these were thrown over the crusty eruptions above mentioned, at each time of attendance, without other applications to them. The excoriated parts also,

* Shoulder blade. † Elder flowers.

while the dressings were preparing, had the benefit of the same, and were afterwards dressed with the Ung. Basil. Nig.* mixt at first with a proportion of the Ung. Diapomph. ver. increasing this latter, but just as occasion required, to promote a gradual healing. By this method the great heat and itch of the humour was allayed, without being in the least repelled, and the sores were kindly digested and healed: not omitting at the same time the use of the Testacea† internally, during the symptomatick fever; and the care of an open body, which indeed was not wanting in this subject; however, she was afterwards purged as necessary, several times, at proper distances.

"But now, for the sake of other little ones, it may be of service to mention further, that notwithstanding her issue run plentifully, and continued so to do, she did in after-times break out in one part or other, especially behind her ears, and about her neck, interspersed with little tumours suppurating in a yellow pus; on which account she became more than once my patient. This was owing to a very keen appetite, and the indulgence given to it, above reason, in the quantities of food she ate, which being much more than sufficient for the nourishment of the body, the vessels became loaded beyond what could be relieved by the discharges at the issue.

"This kind of treatment is certainly more injurious to children than is commonly thought to be, and yet not easy to be prevented, where those that have the power in their hands, do believe they do rather good than harm by it, which is too often the case.

CASE.—"At the very instant of writing this, (the middle of November,) I was sent for to a little Miss of a year old, who had a violent humour on both sides of her head, which for near three quarters of a year past (excepting about a fortnight or three weeks of the warmest part of the summer, at which time of a more free perspiration, there was little or no humour seen in the skin, save only a continuance of running from behind the ears) had been covered with large pieces of oil-skin,

* Ointment of black Basilican. † Oyster shell.

between which, however, and the sores, to abate the drawing thereof, were constantly laid soft linen rags; but notwithstanding this care, such had been the high feeding of this child, even to a degree scarce to be credited, but upon good assurance; and so long had been the vent of humours this way, without any other drain, and this encouraged, not only by the warmth and attraction of the coverings, but by the great itch of the parts, provoking to a frequent rubbing against the pillow, or the nurse's cloaths, so as to stain them with blood: that at my coming, the applications being lifted up, the whole ears, and for some space quite round the same, appeared excoriated, with little broken-headed pustules in several places, discharging much humour, and reeking with a fœtid steam: she had also frequently little flushes of heat of a measly look, here and there in her face.

"She had six teeth, which were the four upper incisors and the two lower middle ones; these she cut in the country, the last of which had been out about a quarter of a year: she was now believed to be about others, having been more restless, especially in the night-time, for near a month past, poking in her mouth, and sometimes screaming out, and was latterly feverish; but her body keeping open, her heats had been much abated by giving her now and then some Gascoign's powder in milk-water, before I came, so that I found her in a pretty good temper: but I felt her gums, and perceived the two first upper molares well advanced, especially that on the left side, and took this opportunity to encourage a consent to let them be opened, if needful.

"With respect to the breakings-out, I proposed an issue, by way of security for the retreat of the humour, without which it would not be safe to heal, even by the mildest methods; but this, as also a blister, or any thing of this kind, however needful to favour such an intention, was utterly rejected: and I confess, that an attempt to carry it off by purging I could not approve of, at this time, with regard to the teeth, without some other provision made, seeing this could not be effected of a sudden,

or by a single dose or two; and lest such a turbulent humour being once turned off from its wonted course, and denied the benefit of any other diverting means, might through irregularities in diet, which I had still some reason to fear, or the effects of cold, which she easily took at this season of the year, or by any other accident, lay the foundation of such disorders in the constitution, as might greatly disturb the remaining dentition, if not heighten into some acute case of dangerous consequence. In consideration, therefore, that this child had several other teeth coming on, I would not, under these disadvantages, promote the drying up a flow of humour of such a continuance, or risque the drawing it back to the blood; but chose rather to do all I could towards moderating the same, by curbing the appetite, and bringing her to a more temperate and regular diet; which I the more earnestly recommended, on account of the mischief that had been done by an excess of this kind, and the little likelihood of reforming this abuse, otherwise than by degrees.

"A few days after my first visit, nurse was frighted at the discovery of a blackness on the child's gum, upon which I was sent for in haste; when I perceived the gum of the first upper grinder on the left side of the deepest livid colour I had ever seen, the whole breadth of the tooth; I therefore ordered my son immediately to lay it well open, and also the two lower side incisors, and forbid nurse to check the bleeding of the gums with fine sugar: after which, the child had the best night's rest of any she had passed in a month before.

"I took notice, one day, that the edges of the oil-skin came without the cap, and that the corners thereof, extending beyond the under rags, had inflamed the skin, and seemed troublesome in those places: these I advised to be rounded off; and, being told that a little humour began to appear on the hinder part of the head, I directed the oil-skin to be removed rather backward, and gradually lessened forward, for the relief of that part of the malady which had spread itself over the articulation of the jaw, and which could not but be grievous in

the exercise thereof: but this could not be long complied with, for whatever of the old sore was not kept covered with the oil-skin, soon crusted over with a stubborn scab, and grew uneasy, exciting a troublesome itch: and it was observable, that nurse taking occasion, soon after the relief given the child by opening the gums, as above mentioned, to wash the excoriated parts two or three days successively with butter and beer, to cleanse away the sordes, the humour became checked thereby, and the child's uneasiness began to renew, till it was drawn afresh, such was the violence of it.

"Thus between the trouble of the humour, and of the teeth, her restlessness ebbed and flowed, being some days in good temper, other days more fretful, till December the 5th, when, being sent for again, on account of the upper grinder on the right side, the gum of which was also turned black, the same was opened, and the child much eased thereby.

"It was thought by those that attended this child, that when she seemed most uneasy with her teeth, her humour was rather heightened; but this disturbance, no doubt, was mutual: for if we consider the nearness of this eruption to the seat of the other grievance, and the itching quality of the humour, so apt to be excited, as has been already said; we may well suppose, that these maladies, like some others we have accounted for, were indeed affected one by the other; and, I think, may rightly judge, how that breaking-out, which, in truth, was of the greatest service to the child in passing through her teeth, with safety to life, and free of convulsions, might yet become an accidental cause of trouble to her in that respect.

"At a visit I made January the 26th, I found her in good temper, the two lower first molares being just broke through the gum in the natural way, and the right lower incisor coming forth, which last had been opened in November; the other three thus treated having been some time out: her gums were now cool and easy, the humour above the ears still discharging, but not altogether so troublesome as before those teeth came

out: but perceiving some occasion at this time, I strictly forbade the giving her confectionary and pastry dainties. I did, moreover, at several opportunities, remind her parents, that she might be kept to an orderly diet; and I had assurances after this, of a conformity to my advice, and of the great abatement of the humour upon it, and received the thanks of the father in particular, for restraining her from flesh meats, which they found had been much to her benefit.

"In short, the grand flow of humour being by a gradual retrenchment cut off, the oil-skin became no longer necessary, which however they had continued some time out of fear, but nothing discharging, it was thrown aside: there was no want of nourishment under this new regimen, the blood being still enabled to throw out a scurfy humour about the chin and ears, in a degree sufficient to promote her thriving in all respects, and yet so moderate in comparison with what had been before, as to be very little trouble or blemish to the child; and there appeared no further need of help for the remaining dentition: notwithstanding after this, the mother was constrained by a superior authority to give way to an issue for the future benefit of the child."

Case III.

"A likely young woman, who had addicted herself to an extraordinary drinking of spirituous liquors, (by which in a few years after, she destroyed herself,) was brought to bed of a son. This infant, when born, and for some time after, was one of the poorest spectacles I ever saw, the perfect picture of extreme old age in miniature, with a loose shrivelled skin like a decayed body, and no apparent room to expect he could live; but by the benefit of a plentiful breast, a scabby eruption very early broke forth in the face, which spread over the forehead, and continued a long time; upon which account I was consulted. This eruption from the first, I looked upon as the most favourable accident that could happen under such miserable circumstances, in a subject whose life was desired; and was verily persuaded, that if it

could be maintained, nothing could contribute more to enable him to pass the dangers of his teeth with safety. I therefore strictly enjoined, that outward applications should be forborne, and great care taken of exposing him to the weather. But the very long continuance of this humour was such a grievance, that many advisers gave in their opinions for the abatement of it, by one means or other; with which I was constantly acquainted, and had no little trouble to guard the friends against; but, inasmuch as I did not consent to their use, they were utterly neglected. Amongst these, the mildest was rhubarb; a remedy so benign indeed to children, that but in very few cases admits an objection; however, in the present, due care being taken by a proper regimen of things, to encourage in as favourable a manner as we could, the tendency of the blood to throw off its vices by the skin, the child was in such a measure freed from the common disturbances, which such principles are apt to occasion in the first passages, while retained in the juices, that he stood in no real need of this help: and as to the service that repeated doses of it might do by its purging quality, toward directing the humour from the face, I could not prefer it to the way in which the blood was purging itself; and had reason to think I did best without it, in so tender a patient, whose stomach could bear very little medicine. Hence,

"I had the satisfaction to see this poor infant get through his teeth, entirely free of convulsions, and indeed of any trouble from them that required my immediate assistance, save in the cutting of the canini, at nineteen months old, in the month of October; before which the humour having some time disappeared, it was remarkable, that these teeth proved so vexatious above all the rest, that I found it needful to recommend the opening of his gums: but this was strongly opposed by an ancient grandmother, with the usual objections, till the fear of losing the child brought her to a compliance; upon which he was very soon relieved by opening the four canini, all which came out in a few days.

"This boy is now ten years old, little in stature, and of a thin constitution; but lively, and enjoys his health clear of eruptions, having had but little occasion for physic: he was suckled near two years."

CASE IV.

"I was called not long since, in the month of June, to a likely little master of seven years old upon London Bridge, who had been of a sudden seized with a large tumefaction, or puffing up of both sides of his neck, circumscribed with a small efflorescence of the skin; of which however, being costive, he was soon relieved by a diversion downward, (without any external remedy,) succeeded by two or three nitrous draughts, not suffering himself to be blooded: concerning whom, I had this further account from the mother, that before he was two years old, a violent humour broke out upon his forehead, which run down his face, and vext him so much, that she was forced to confine his hands that he might not tear himself: for this she made use of cream mixed with the juice of houseleek, and thereby in a few days removed the malady, with its troublesome symptoms. When about five years old, he was much disordered in his head, which ended in an imposthume, and brought on a deafness in his right ear, which yet remains upon him; but that it had been observed since, upon the appearance of a little scurfy humour in his face, which had several times shewed itself, he had recovered his hearing perfectly well, and held it during the continuance thereof; but, that retiring, his deafness returned again. This child cut his first teeth at four months old, and had a kindly dentition, having completed his number at about a year and a half old; so that the repulse of this humour could have no effect upon that; and it was thought that the cause or occasion of this eruption happened but a fortnight before it came on; which was believed to be a surfeit, from the mother's giving him suck when her blood was more than ordinary heated; he being before looked upon as a healthy child. Be that as it will, it was manifest, by the manner in which the hearing reco-

vered itself, what had done the mischief, and gives ground to believe, that if the excrementitious humours of the blood had been permitted to throw off, as they ought to have been, or at least better secured in their retreat, no such thing had happened: however, from the encouragement received by the returns of his hearing, I took occasion to set before her the advantages that might accrue in time by the scurfy humour visiting the face again, though in a lesser degree, if not molested by outward applications.

"But let parents and nurses consider, by how small an addition (in their account) the more gentle cream was armed with a power to hurt, and how harmless and useful soever they have found this mixture, in burns and inflammations from external causes, it is improper to be used to a humour casting out from the blood. Baglivi*, speaking of the conversion of one disease into another, takes notice, that Hippocrates ordered the mutual succession of diseases to be carefully minded; one reason whereof was, that new diseases, like an upstart offspring, follow upon, and spring out of others: and, amongst several instances to shew the justness of this direction, our author observes, that the striking in, or irregular cure of the scab, or itch, is followed by many unlucky diseases; and soon after quotes from Sennertus, that a boy having struck in the scab with liniments, was seized with blindness and a fever, of which he died upon the accession of an epileptic fit. And I make no doubt, but among the unhappy cases of children troubled with tedious weaknesses, or soreness of their eyes among us, there are several whose foundation has been laid in a too hasty check given to the like discharges by the skin, though it has not been in such a degree as to prove fatal to life; but the misfortune is, when the ill effects of this imprudence are not immediately seen, in some sudden and surprizing symptoms, ignorant persons are ready to believe the practice safe; and what mischief ariseth at a distance, in some other shape, passeth with them for a distemper no ways related to the former.

* Pract. of Physic, &c. Eng. Transl. 2d Ed. p. 276.

"I could here bring in a number of examples from other authors, and not a few of my own knowledge, of persons in the higher ages, whose lives have either been apparently cut short, or the remains of their days made uncomfortable, by unadvised attempts of this kind, notwithstanding their superior strength, seemingly above that of infants, to bear such a repulse: but this I think needless for the practitioner, who can hardly be thought a stranger to such truths; and whether all that can be said, will deter some amongst the managers of children from tampering in their own conceited way, till they have done irretrievable mischief, I much question. However, my chief design, by examples, being to illustrate the dentition of infants; and the cases of adults being of little other use here, than occasionally to confirm some particular matter, the evils whereof may affect either of them; I shall introduce no more of these than may just serve to that end; but chuse rather, for instruction sake, to confine myself, as much as possible, to those of young children; and shall therefore close this head, (whose importance, in a free eruption by the skin to the welfare of the infant in general, and to the dentition in particular, demands a more than ordinary regard,) with a pertinent little history, that can hardly fail of its just weight on a considering mind.

"In a family, (with whom I am but newly acquainted,) there have been ten children born, six of which are dead; and it is remarkable, that not one of these had ever any humour that broke forth of the skin: all which had convulsion fits, more or less, except one, who passed through her teeth indeed with only a more than ordinary difficulty in her breath at such times, but died at the age of five years of a scarlet fever, and swelling in her throat, by which it was thought she was choaked, notwithstanding the use of all proper remedies.

"Three of these died in the dentition time, one at eleven months old, of convulsions in his bowels, who was a fine child the first six months, till he began to cut teeth. This child came the nearest of all the six to an eruption, within whose skin, his mother said she could feel, when rub-

bing with her fingers, a kind of roughness, somewhat hard and knotty, but no humour ever became visible.

"Another of these three died, at fifteen months old, of convulsions, in cutting his great teeth.

"And the third at nine months old, of convulsions in his bowels, when his first teeth were near cutting out.

"Of the other two, one died in the month, of convulsions, having been in that condition near a fortnight. This was a fine child born, but went into fits at three days old, which was imputed to the great affliction of the mother at the death of one of her other children, who lay the whole time of its distress, wherein he was strongly convulsed, in her lap, when between five and six months gone with this.

"The last died at four years and a half old, of a malignant measles with purples, after having got through his teeth, and the convulsions that afflicted him also in that work.

"Of the four that are living, the eldest had fits with almost all his teeth, and so bad, that his mother has sat up with him a week together, without going to bed; notwithstanding which, she was persuaded not to let his gums be opened, for fear of their becoming hardened by it. After his first convulsions, which were at eleven months old, he fell rickety, and drooped till he was about five years, and had not all his teeth till near that age. This child also never had any humour in the skin, his chief help was from the air; for the benefit of which, he was removed out of town, as soon as he began his teeth, which however did not secure him from convulsions; but he was often ailing, and very short-breathed, unless in the air, which was changed two or three times, both far and near; but he has stood his health well at London for three years past, and is now sixteen years old.

"The next living is a girl; she likewise never had any humour in the skin, and at about four months old, was seized with strong convulsions, which held near three days. She had indeed an emetic given her about this time, which made her puke, and purge very much; she had also a fœtid mixture after this, and has had no con-

vulsions since; but had once a tumour appearing under her ear, which went off again. She never was in the air, and is now above seven years old.

"The third is a boy of three years eight months old: this child, different from all before him, had the benefit of the red-gum, and that very early, which was moderate, till he was three months old; after which it became very rank in his arms and body; he broke out also in his head, which continued till he was a year old; and, being apt to be costive, took a little manna often. At a year and a half, the humour being out, like a rash, about his loins, by some cold struck in, which took away the use of his lower limbs, so that he could not stand upright for a fortnight: however, by what had been thrown out from the blood, he was preserved from convulsions, not having had one fit; has got all his teeth, and is a fine promising child, though he never was in the country.

"The youngest is a girl: this child had no appearance of humour till about four months old, but then began to break out. I saw her first at the age of fifteen months, with a spot of dry scurfy humour remaining in the back part of her head, which had been worse; her hands, to some space above the wrists; and her feet, to near half way up her legs, but no higher, were beset with many large pustules: of these some were in a suppurated state, some not so far advanced, rising at first in blisters with a clear watery humour, and then tending to maturation; others at the same time were dried into a scab; the skin tumid, and inflamed between those pustules that were not in the decline: she broke out also in her body, but it was observable, that when her feet broke out, her upper parts grew better; for this reason, being consulted only about the service of an issue, I waved at this time any means to divert the humour from the legs, and through the good management I observed in the mother's nursing, and other incidents I shall mention, found no occasion afterwards.

"This careful parent had acted very prudently, both in the last, and in the present case, having forborn all repelling applications, though several had been recom-

mended to her: she only fomented the inflamed and grieved parts (after breaking such pustules as were well suppurated) with milk, in which bread had been boiled, which she used pretty hot; and then wrapped them up with linen rags, whereby their heat and tension were greatly abated, and the humour cherished with the less inquietude.

"The child herself had been very apt to be costive, till about the age of seventeen months; for which she often took a little manna, as the other had done; but then she grew loose of her own accord, and for near two months together, had two or three large and very stinking stools in a day, which stench then abated, and a moderate laxness only continued, which was succeeded by a mild open disposition of body, which she still enjoys. These several benefits had kept her entirely free of convulsions, having never had a fit from the birth, and at the times of her cutting teeth, her chief trouble was only a little wheesing cough: in this work, indeed, she was not forward, having no more than eight at twenty months old, but is now, in all appearance, in a very thriving way, though she likewise never was in the country.

"All these children were suckled by the mother, except that which died in the month, which scarce took any kind of food after it being seized. I saw the three last of the surviving children, with healthy florid countenances, which I was told was the natural complexion of the rest, until altered by distemper. The parents themselves seemed also of hale constitutions. Nevertheless here was some morbid principle latent in the blood, which to those in whom it was detained, proved fatal, or, at least, hazardous to life; but where in one way or other, and chiefly by the skin, it was timely discharged, became the effectual security of the child.

"Upon the whole, we have abundant reason to believe, that the constitution is not only amended, for the present, by such eruptions, which so evidently expel what is hurtful out of the body; but that by a wise treatment of them, even life, and health, the most valuable comfort of it, may be happily extended. And are not these benefits

that vastly outweigh the little outward trouble that should be borne to attain them, and which many times is rendered more vexatious through indiscretion, than would be the natural consequence of things, if care was taken to conform to right rules of conduct? What do we not, when grown up, submit to, for deliverance from many diseases, whose rise is truly owing to some early fault or depravity of the juices, (even to vesicatories, causticks, incisions, and what not?) and, after all, many times, reap not half the relief we might be favoured with in this way: and which, where there is skill and patience to improve, as occasion may require, would tend more to prevent the necessity of those painful inflictions in after-life, than any thing beside.

"And now, with regard to the grand design of this treatise, which is to discover the perils of the teeth in their causes, and the ways to avoid them; let me leave it with the considerate guardian, to reflect on the advantage of these appearances in the skin, to the great work of this time; and what ought to be borne with, rather than enter into measures to suppress them.

"May they also see, what pernicious consequences those prejudices that oppose the free opening of children's gums tend to, even the utter neglect of a very useful remedy in its highest need. To let three children die under dentition-griefs, and a fourth conflict with the sorest trials of this kind (as but now related), without once experiencing what relief might be had from it! What greater slight can be put upon the worst of means?

"Fontanus tells us, that having in vain attempted the cure of a little boy afflicted with a very great moisture of the ears, by a course of remedies to divert and correct the great humidity of the brain, and being upon consultation, had about the use of more powerful means, an impudent pretender very confidently undertook to effect the same in three days. But mark the event! By the application of strong astringents, in about ten hours space, the humour being wholly restrained, and turned inward, the child was first deprived of hearing, then of

speech, became afterwards convulsed, and died very suddenly.

"The last of those, which (for reasons already given) I have called internal casual causes of a troublesome dentition, comes now to be spoke to. This is founded in a suppression of a plentiful slaver or driveling by the mouth.

"The more than ordinary fluxion or discharge by the mouths of children, however it may be wanting in some few, is, for the most part, one of the earliest indications by which we judge the work of dentition to be coming forward; and this is seen in many so long before any teeth come out, that we may reasonably conclude their very first springs of advance do occasion somewhat of an uneasy sensation, and are the original cause of this appearance. This discharge, if no accident happens, tends greatly to the benefit of children, preventing or moderating that tension and inflammation here, which are the common effects of a fluxion to other grieved parts where the humours are more confined. But there are several ways by which these little ones may become affected from hence. Monsieurs Petit and Chariere, have particularly remarked the manner in which several disorders arise from the abundance of this fluid carried into the stomach; but I have not met with any notice, which they or others have taken of the mischief that may happen by an accidental obstruction of its flow from the glands. The slaver, which forces out sometimes in such abundance, as to be almost incredible, though it be the same kind of fluid as that which nature constantly supplies the mouth withal, and its increased discharge at this time is in part accounted for, in the reasoning of these authors, from the action of the tongue and jaws, and the convulsive motions of the muscles excited by pain; yet are we to consider the stimulus of that pain; also, as an occasion of a much greater afflux of humours to the mouth (wherein this seat of pain is) than usual: for, scarce in any other instance of a more remote pain, even when through anguish infants cry hard and long, and the said parts are vehemently exercised, do we observe a discharge from

the mouth, equal to that which is occasioned by dentition.

"Now, if there be no kind of evacuation from the human body, but what is liable to become one way or other obstructed, we cannot but admire the possibility of the like accident, here attended with those common effects which a sudden suppression of any extraordinary flow of humours is apt to bring on, if no other discharge happens by way of relief, to wit, a heat and tension of the parts, at least where the restraint is made, if not a feverish disorder of the whole frame."

I have thus, I trust, sufficiently illustrated the importance of keeping up external discharge and eruption: these are the most prominent of preventive measures. I shall now proceed to the next subject, which is Climate.

SECTION IV.

Climate.

No man of any experience can deny the influence of climate and season upon the human constitution, as well as upon animals, plants, &c. Its influence is, also, especially marked upon the properties and operation of remedies. Hot, cold, moist, and dry climates, however, have been found congenial to the inhabitants born and reared in them. I have myself, in hot climates, seen as stout, strong, muscular men as any in the world; as well as in cold, moist, and dry. The spots marked unhealthy, have been those where the extremes of either temperature have prevailed, or where they have suddenly changed from one extreme to the other.

The effects of extreme cold climate, are precisely the same as those of extreme heat. I have been informed of a remarkable proof of this effect on the constitution of a lieutenant in the royal navy, and a medical gentlemen on this establishment, who were brothers. They left England at the same period; the latter for India, and the for-

mer for the lakes in Canada. The frigate the lieutenant was in had much bombarding duty, and was often frozen in the lakes. On his return home, although he had been exceedingly stout, his constitution was lamentably shattered by the effects of extreme cold. When the medical gentleman first arrived in India, he was likewise inclined to be stout; but from being in excessive hot parts of the country, he experienced a reduction similar to his brothers. An elder brother, also in the navy, who had recently seen them both, remarked this extraordinary analogy. His experience in all parts of the world, having been a long time in H. M.'s service, gave considerable importance to his opinion, so far as it regarded effect of opposite climates.

Sudden accession of heat and cold in any climate, is an acknowledged cause of the worst of diseases, and more especially when combined with dryness in the atmosphere. Moisture always moderates a high temperature, on the principle I have before explained*.

It is known to the experienced, that extreme cold and frosty weather is highly prejudicial during the period of dentition; and in like manner, every medical man is aware, that in Hindoostan, June and August are the hottest, and the two fatal months, to children at this critical period; in like manner, in Europe, December and January. To establish this fact, a reference to the obituary columns of newspapers will be found sufficient. Extreme heat causes apathy, languor, convulsion, and death. Extreme cold benumbs, debilitates, induces convulsion, and also death. One effect of heat upon a child is remittent fever, and this terminates in convulsion, with which a child dies, in India, in twenty-four hours. The effect of extreme cold is inflammatory fever, and is equally suddenly fatal.

If this be a fact, it must be our object, during the dentition period, to guard against a climate where sudden changes and extreme heats prevail. In all the principal stations included within the limits of Hindoostan, it will be found that deaths among children are lamentably fre-

* See page 98.

quent and sudden during the months of June, July, and August.

In Bengal not so much so. The temperature is more equal, and though often sultry, the moisture of the atmosphere prevents excessive heat. Children, however, do not look so well in the latter as in the former climate. In no part of the world is infancy more beautiful than in Hindoostan. Here a child is in a state of perfect repletion, a most enlivening picture of health; and although such a state of infancy is that which the admiring parents desire, yet medical men know that it is one attended with danger. It may be compared to an inflammable body, the least friction of which will set it on fire. So it is with the poor child, who has lived in a fine cool climate, and under the influence of tatties until the cessation of the periodical hot wind, which takes place in June, when calms, and, as a consequence, a sudden occurrence of excessive heat, operate upon this full habit like a match upon combustible matter. In this way children suddenly die in the Upper Provinces. There is not time for medicine to take its full effect. The determination of the inflammatory disorder is instantly to the head. This is not the case in Bengal, where children are generally pallid, sallow, thin, and constantly suffering from bowel complaints; indeed, never out of the doctor's list; and parents are unceasingly suffering the greatest anxiety and alarm,—for ever wishing themselves out of this "abominable climate." Nevertheless these little patients seldom die. They continue weakly for some time, and when sent to Europe, often become fine children. It has been the case, that many families, when residing in Hindoostan, have lost all their children from these sudden vicissitudes; but when their destination has been altered to Bengal, the melancholy loss of their offspring no longer ensued.

While, however, I strongly recommend the climate of Bengal for infants during dentition, I am decidedly against it, as a fit climate to renovate their strength. Hindoostan, to a child above three years of age, is almost equal to Europe.

Nagpore, and all climates in the latitude of Bengal, are equally favourable to the dentition period. During the time I was in that part of India, my little patients suffered mostly from intermitting fever; and although they were weakly, I never had the misfortune to lose one.

If my conclusions are true, and I have every reason to believe they are, as they are drawn from practice, not from theory, how are we to prevent the effects of the climate on the infant constitution, during dentition, in Hindoostan? These preventive means I shall now proceed to point out. In the first place, it will be expedient to produce an artificial climate. In the second, to prevent any sudden change, since I ascribe the tenability of the climate of Bengal for children to its equality, that is to say, slight thermometrical variation during each diurnal revolution of the sun, and conceive the climate of Hindoostan to be inimical to the dentition period, owing to sudden and great variations.

Two medical gentlemen on this establishment have laudably exerted their talents, with considerable zeal and ingenuity, to supply the desideratum. Mr. Hough's invention was an excavation of about six feet from the surface of the earth, at the bottom of which he built a tunnel of four feet square. The earth was then thrown over the tunnel, at the extreme end of which a communication of equal dimensions, something like a chimney, was built about four feet above the earth. The tunnel was then carried about a hundred feet under ground, and opened into some room in the dwelling, the doors of which were directed to be closed; but in the roof there were apertures of different dimensions for the escape of the hot air, as the cold ascended from the tunnel. I had the pleasure of seeing one of these, as I have described, at Allahabad; and when any wind was blowing, it decidedly made the temperature of the room into which the tunnel opened, many degrees less than in any other. The advantages of the invention are obvious. 1st. There can never be draught in the room. 2d. The temperature must be always equal. 3d. and finally, the expense is trifling, and the making feasible in every situation. Such a

tunnel must be evidently of infinite importance for a nursery, as the mouth of the tunnel can be covered over with iron grating. But while the benefits to be obtained are thus clear, it is likewise obvious, that in calm weather, when there is not a breath of wind, the tunnel is of no use. Mr. Jefferies discovered an improvement in the foregoing, that is to say, not any improvement by which the former was no longer rendered expedient, but one which supplied the desideratum of wind. I had the satisfaction of seeing the apparatus in Mr. Jefferies' own house at Cawnpore.

In a doorway much broader than the common size, was placed a framework very nearly square: this was something like a venetian door, saving that the venetians were composed of slips of cloth; these acted as valves to the frame or door. Behind the valves was a coarse kind of cotton cloth, of the same size as the framework. Above was a small reservoir for water, which dropped through small apertures on the cloth. Behind the cloth was a square piece of wood or door, the size, or a little larger than the cloth. A man pulled this towards him, the action of which shut the valves of the framework. It was then let down, the action of which forced the air thus cooled with astonishing velocity into the room, which circulated with great force into every apartment of the house. The doors of Mr. J.'s house were open during the experiment, and they shut to with immense power. Thus as the frame made of wood was pulled open, the valves shut by the power of suction, and the cloth being wetted from the reservoir above, became the medium of cooling the atmosphere: then, on letting down again the frame of wood, which fell with force, the current of cool air was propelled through the valves into the house. This alternate action, as it must appear, produced a delightful temperature, and the apparatus served to supply these delightful cold currents during calms, and when the weather was oppressive and sultry.

I have thus described these two inventions, as I witnessed them myself. I do not believe these gentlemen ever published these important discoveries, which are so cre-

ditable to them, and of incalculable consequence as a means of preserving health, where heat is deemed a cause of sickness.

The ordinary method, however, of producing artificial cold, is by tatties; but they are only (with few exceptions) adopted in the Upper Provinces. They are unquestionably desirable in Bengal, and ought to be used.

I am aware of the general objection to the use of tatties, which is, that they are productive of damp, and often induce serious indispositions. The objection, however, is groundless. I deny that tatties produce the dampness so much dreaded. Instead of there being a superabundance of moisture, there is a deficiency in the atmosphere cooled by tatties. We must remember that it is the consumption of moisture that produces the cold; and unless there was a constant supply of moisture to the tattie to renew the consumption, or the evaporation which *takes place at outer side of the tattie*, cold would not be produced. If, therefore, the effect of the tattie is cold, and if cold is the effect of the consumption of moisture, it would be a new species of logic to say that moisture still exists after it has evaporated*.

The alarm, therefore, of dampness is groundless. I do acknowledge, that precaution in respect to where children sit to play, is necessary where tatties are in use†: with this precaution, tatties are of great benefit as a preventive of the great cause of infantile disease, which is heat. But another great means of prevention is Diet.

SECTION V.

Diet.

I have entered so fully, and with so much caution, into this subject, in Part I. of this work, that it may appear unnecessary to my readers to say more; but there are still some points relating exclusively to *preventives*, which

* See page 98. † See page 27.

are best mentioned here. Especially as it respects that diet, which increases the temperature of the body, and combines with the excessive heat of the season, to induce to those determinations to the head, which are so suddenly fatal, and respecting which we have received such melancholy and incontestable evidence in the Third Part of this work, that during dentition a predisposition to this determination is always present at all seasons, both in Europe and in India*.

It is a fact familiar to every one, that particular articles of food and drink alter the ordinary colour of the dejections: for instance, if we use astringents, the dejections become black; if acids, frothy, with mucous crusts, and coagula of whatever albuminous matter may chance to intersect the excrementitious discharges: if green vegetables, the dejections partake of their character; wines likewise impart a colour similar to that imparted by food; port wine and claret, for instance, invariably produce dejections of an appearance similar to those liquids. While such is the effect on the nurse or mother from food taken into her stomach, similar results ensue to the milk given to infants. It is astonishing how every atom of food taken by the nurse impregnates her milk with the same constituent qualities. If she take iron, it will become chalybeate; if acid, frothy, muciferous, and coagulated; if volatile ammonia, it will become volatile. I had a singular proof of this, in a woman who was bitten by a venomous snake, on the Nipal frontier. I gave her a large dose of volatile alkali, which restored the poor woman; but she was a nurse, and consequently her milk, the next morning, had quite the appearance of eau-de-luce. Indeed, whatever affects the mother will affect the child. So that a grand preventive of disease, when we find an infant's bowels of a bad colour and griped, is to ascertain and regulate the diet of the nurse. The same changes are visible when food is eaten by a child, or its bowels are under the operation of medicine. Arrow-root will give a mucous appearance to the dejections;

* See Section XV. Part III.

so does castor oil. Senna and salts give a black tinge; rhubarb, a bright yellow; and calomel often, where there is acidity in the bowels, a florid green. These are almost invariably the effects on the bowels of children, who are otherwise enjoying the finest health. This ought to be kept in remembrance, otherwise we may give medicine as a preventive, when we are, from our hastiness and want of discrimination, absolutely causing disease from uncalled-for interference. Suppose a mother mistakes the substance of arrow-root or castor oil, in the bowels, for mucus, and in consequence administers calomel to remove it; in this case she would continue the arrow-root to maintain the strength, and give the castor oil to clear away the calomel. The matter mistaken for mucus must again necessarily appear, and probably in double the quantity. The calomel is repeated, and the same results follow. The mother becomes perplexed, and unless the error be discovered in time, and the course stopped, very serious consequences are likely to take place.

Similar accidents might likewise occur by neglecting to ascertain the mother's diet; as we might be purging away supposed disease in the child, when its origin is in the diet of the nurse, and when, by changing this, the symptoms exhibited in the little patient might be removed.

The tendency of these remarks is to show what great care must be taken in all our inquiries into management of children, with respect to their diet, or that of the nurses. There are, however, children whose stomachs will receive all kinds of mixtures, and whose mothers may partake of any thing acrid, offensive, and deteriorating. These are exceptions. The poor give their children any description of food, and some of them become stout, and a fine race of men; but while these poor people will only raise one or two children out of ten, the better orders, who have comforts and means, and are not over indulgent, will seldom lose more than one or two out of the same number; and those that are lost are usually the first children, who have been badly managed, by the inexperience of parents.

There is no period when children in Hindoostan more imperiously demand attention, in respect to diet, than in the one alluded to in the preceding section*; and precautionary measures should be observed some time before the setting in of the excessively hot months. Good mothers must curtail their pets in the quantity and quality of food, to save them from the awful visitation of fever, and determinations to the head. A child ought to depend upon its mother's milk until the period mentioned in Part First, and if the infant be on its feeding, should be particularly attended to. It will be found that the barley beverage and the meal, on account of their cooling nature, are admirably adapted to the purpose. I would recommend a suspension of the d'hal and rice system during the months in question; as this diet distends the stomach, when the constitution is inclined to heat, or when the temperature is high; in short, the rule must be to keep the child as low as possible. I deem the barley beverage an admirable diet as a means of prevention; that is, with respect to preserving a proper temperature on the system. But a child does require a change. It is the nature of human being. We are mutable in every way. It is, therefore a desideratum to supply this change: and I rejoice to say, a very late discovery enables me to recommend a most delightful one—the meal of potatoes†,

* In further testimony of the importance of our subject, the annual average of births in London within the bills of mortality for ten successive years was 16,283, out of which were buried, under five years of age, 10,145, and from amongst these 7,987 were under two years of age. Surely there must have been some error in management.

† POTATOE FLOUR.

The undermentioned letter on this valuable discovery, I extract from the columns of the Scotsman, dated August 1827.

On the Means of increasing the Quantity and improving the Quality of Food.

"(The following article was put into our hands by a medical gentleman. It presents the result of a pretty long course of experiment and observation on a subject of a good deal of importance, and is, we think, entitled to public attention.)"

"Every country which depends chiefly on potatoes for food, must be frequently exposed to scarcity, because the surplus of one year's crop cannot be preserved to supply the deficiency of another, as in the case of grain. The extreme poverty of the people has compelled them to subsist almost entirely on this root for many years, and it has therefore be-

the properties of which are both nourishing, and not likely to induce any increase of excitement, and can be

come an object of the highest importance to discover a remedy for the above defect.—Since the famine which prevailed in Ireland in the year 1821, I have paid great attention to this subject, and I found that this purpose could be accomplished in various ways, but the conversion of them into flour I consider far superior in utility to every other means. By many experiments, I find that potatoes of good quality will afford about a fourth of their weight of this flour, if carefully prepared; and it is notorious, that a very large proportion of what is sold in this country under the name of arrow-root, is actually potatoe flour manufactured at home. Accum stated this several years ago, and medical men are quite aware of the fact; nor is the purchaser injured by the deception, the one being, in all respects, precisely the same with the other, of which every one may satisfy himself by comparing them. I have very often known persons, who had long been accustomed to the use of arrow-root in the West Indies, take this flour in its stead, without ever suspecting the smallest difference, and I have myself frequently given it to invalids with the same advantage. Indeed the two roots are natives of the same climate, and entirely of the same quality, being both applied to the same use; the flour of arrow-root is employed for starching linens as well as that of potatoes, and it is but very recently that it has been used for food even in that country. Potatoe flour is admirably adapted for commercial purposes, from its great value and small bulk, and it may be kept for a great length of time without damage; indeed I have known it preserved for eight years without any change whatever. This article has long been occasionally used in several respectable families in the Highlands, as a substitute for wheaten flour, on a small scale, to satisfy curiosity, though it has never been converted to any public advantage as food, so far as I know. I have myself, however, used it for a considerable time, and in large quantity, with great satisfaction. For pudding, pancakes, and all sorts of pastry, it is incomparably good; boiled in milk, or in water coloured with milk, it makes most excellent food; and mixed with a small portion of coarse wheaten flour, with eggs, or even with mashed potatoes, it makes the finest loaf bread, and improvement will no doubt daily be made upon it; in short it is in all respects the same with arrow-root, if not superior to common flour. The enormous quantity which the stomach receives, and which the system indeed requires of potatoes for its nourishment, when it is the sole food, cannot fail to be highly injurious to that organ, and diseases of that class have therefore become very frequent of late years, to the unspeakable distress of the lower orders. On weighing the measure of this root usually allotted for a labourer's meal, I found it amounted to six pounds; and from this I had a pound and a half of the flour, which afforded me eight breakfasts for my own use, each consisting of two table spoonfuls of flour boiled in a pint of milk. This very interesting fact may give us some idea of the extreme importance of this discovery. Here we have many wholesome, nourishing, delicious, nay, luxrious meals, for one very bad one. In consequence of the very easy and familiar process which the material had undergone, from the worst of all human food we have, in truth, the very best. The average produce of an acre of land under potatoes over the united kingdom, cultivated by the spade, may be calculated at from 150 to 200 barrels*, or

* In the year 1800, an acre of land in Fife produced 80 bolls, or 320 barrels potatoes.

prepared at a period when the potatoes are in the greatest perfection, and preserved to any length of period: but my readers are already acquainted with my sentiments on

from 14 to 18 tons, which will yield from three to four and a half tons of flour, or from 50 to 70 bolls of 140 lbs.; now our best land under wheat will not average above six or eight bolls an acre. When we add to this the superior quality of this flour, we find here an advantage almost too great for the human mind to conceive. Immense as the advantage is, however, it is unquestionably true, as may easily be proved by the infallible test of experiment, which all, even the poorest can make, and to which they are earnestly entreated to have recourse. The annual expense of supporting the poor of England and Wales cannot fall short of eight millions of money, including every way in which charity is bestowed. Under this system, let an acre of land and the milk of a cow be assigned for every four poor families; with these and a few hens they may live very comfortably. To breakfast and supper they may have this flour with milk, and to dinner they may have pancakes or pudding by the addition of eggs. This is stated as one instance of the incalculable advantages which may flow from this discovery. If the yearly produce of the united kingdom be worth several hundred millions, as political calculators assert, what must be the value of that improvement which increases that produce many fold. By the due cultivation of this most important and most useful of all objects, in the short space of two years, Britain and Ireland may support any population. Instead of depending on other countries for food, we could actually supply the greater part of Europe. Even China would maintain many times its present inhabitants, under this system.

According to the usual price of potatoes, the boll of this flour will cost about seven shillings, or fourteen shillings the sack; the pound will cost about a halfpenny, and half a pound for each person may be about the average consumption of a family. Now this is the very same substance which the rich and luxurious at present enjoy, and actually consume in large quantities, at the exorbitant price of two shillings the pound, or £28 the sack, under the foreign name of arrow-root, and this but lately was sold at double that price, while all this benefit is obtained without any expense whatever.*—Perhaps there is no process more universally known than the manufacture of this flour under the appellation of potatoe starch; by means of a barrel lined with sheet-iron grating, placed horizontally on an axle, like a butter churn, the women and children of a family may prepare any quantity of this flour, and this barrel would serve fifty or sixty families, at an expense of less than a shilling to each. The pulpy mass may be filtered through the milk strainer, diluting it copiously with soft water, and it may be dried on a cloth exposed to the sun, or in an oven over a slow fire, stirring it frequently. In towns and populous places, mills will no doubt be constructed for grinding or mashing it, and proper kilns for drying it. The refuse makes excellent puddings, if prepared in the same manner with rice. Indeed every wellwisher to his country and to his species must support it. The general acquaintance which our people already have with this flour, though under a different name, and for a different purpose, might be expected to favour the rapid progress of the disco-

* 80 bolls of this flour, which an acre will produce, if sold as arrow-root at 2s. per pound, would amount to £1120.

diet; I of course recommend the meal to be always fresh. This meal can be given in the shape of cakes, puddings, or of the thick barley meal. Keep the bowels well open.

very. Too many persons, however, entertain a silly contemptible prejudice against any thing that is not already in some degree familiar to them; forgetting that every thing was once new. Can any thing good come out of Galilee? is a sentiment as prevalent at this day, as it was 1800 years ago. The health and comfort of the lower classes were no doubt my chief object in cultivating this subject, and to them it is certainly the most important, although it cannot be denied, that these foolish prejudices prevail most strongly among them. It must, however, be adopted, and that very speedily; the numerous public institutions for instructing the people in useful knowledge which now exist, must be very favourable to its dissemination. The vast increase of its production, the excellence of its quality, their more recent privations, and the common use of arrow-root, are all in its favour; and a liberal and patriotic periodical press will be a most powerful agent. It particularly belongs to the clergy of all denominations to exert their influence in this work of benevolence, and it is to be hoped that no selfish motive will diminish their zeal in an employment so peculiarly becoming their sacred office. The managers of public works and hospitals will patronize it. Schoolmasters will also have much in their power in recommending this most useful kind of domestic economy by example and precept.

The poorest mechanic or labourer may now live with a degree of comfort hitherto unknown, and the enjoyment of it will depend entirely on himself. We are aware that potatoe starch for linens is prohibited, with the very ineffectual intention of favouring the duty on wheaten starch, which returns but a very trifling revenue. This prohibition, however, could not have been intended to affect the making of potatoe flour for food, a thing then totally unknown. The legislature could never have contemplated a measure so cruel, unjust, and oppressive, and which could never be put in execution without placing an excise officer in every house; nor is it under the present liberal and enlightened government it is likely to be enforced, even had such a prohibition existed. I am happy to have it in my power to state, that one of the highest and best informed officers of the revenue in Scotland, agrees entirely in this opinion.

"It is not the surplus only of the potatoe crop that may be converted into flour, and be thus preserved from destruction, but even the whole, except the seed, may be thus treated. In consequence of the great increase of produce, the extent of land required for cultivation will be so small, that pasture must be much increased, and animal food will also become very abundant. The Highlands, which are at present over peopled, will be able to support many times the inhabitants which they now possess, and in much greater comfort, and the same may be said of Ireland. If Henry the Great prayed that he might see every peasant in his kingdom have a fowl to dinner on Sundays, how gratifying must it be to our benevolent and beloved Sovereign to reflect, that the poorest man in his vast empire may now enjoy what is better than a fowl every day in the year. Potatoes will grow in every soil and in every climate, and the same land will produce undiminished crops of them successively for any length of time. Corn must be thrashed, fanned, kiln-dried, ground, and sifted, all of them tedious, laborious, and some of them very expensive operations; it is also frequently injured by

Where children are habitually costive, much annoyance and danger are experienced from the struggling of infants, when endeavouring to administer purgatives.

wind and by rain, after it is ripe; but we have merely to wash the potatoes, mash them down by a few turns of the barrel, then filter the pulp through any convenient strainer, and in three or four hours after the root is dug from the ground it is fit for food; though for keeping, it must be made perfectly dry.

"I am aware that the plan of converting potatoes into flour has been suggested before; but I strongly suspect that the simplicity and ease with which it can be carried into effect, and the great advantages it holds out, especially as a means of storing the surplus of an abundant crop, have not been at all understood. It is not from a few slight trials, but after some years of observation and enquiry, that I find myself authorised to speak so decidedly in its favour."

Since the foregoing was printed off, I received the paper for the 16th of January 1828, and extract the following, which is of too great importance to be omitted.

By the Right Hon. Sir John Sinclair, Bart.

"An English acre of potatoes, when properly cultivated, produces, on an average, 216 bushels, which, at 75lbs. per bushel, amounts, in all, to 16,200lbs. per acre.

Of this weight, only one-fourth consist of solid matter; either 1. Farina or flour; or, 2. Fibre.

1. *The Farina.*—The quantity of farina varies according to the sort, the soil, and the season; but, on the whole, it may be stated, that about one-sixth part of the contents of the raw potatoe consists of farina, and the half of that weight of fibre.

The produce of an English acre of potatoes, therefore, contains, of

	lbs.
Farina	2,750
Fibre	1,350
Solid matter	4,100
Liquid matter	12,100
Total	16,200

The farina of an acre of potatoes, at 3d per lb. would produce £34. 7s. 6d: at 2d, £22, 18s 4d; and at 1d, £11, 9s. 2d.

There are four modes in which the farina might be used as food:—

1st. Mixing it with wheaten flour, in its dry state, in the manufacture of bread. But in this shape it is difficult to do it equally, or to preserve it properly mixed with the wheaten flour in baking, owing to its greater weight.

2d. Converting it into jelly, in the same manner as arrow-root, and taking it with milk for breakfast or supper.

3d. Farina jelly, however, being rich and glutinous by itself, it is a great improvement, when it is boiling, gradually to mix it with one or two tablespoonfuls of wheaten flour, oatmeal, barley meal, ground rice, or the flour of Indian corn, stirring it all the time, that the two substances may be thoroughly incorporated. This makes a pleasant, nourishing, and substantial diet, which cannot be too much recommended, particularly for invalids. It may be taken either with or without milk.

4th. Converting the farina *into jelly*, and then mixing it with wheaten flour, in the manufacture of bread. This "*Farina Bread*," as it may be

We will proceed to point out a method to prevent this; for the bowels must be opened, to keep the body temperate and cool, and to guard against the effects of oppressive heat.

called, is pleasant to eat, light, and easily digested, and any defects in the flour, arising from an unfavourable season, are corrected by the rich and glutinous matter thus incorporated with it. This is a new idea, which fortunately occurred to the author of this paper; and it is, perhaps, the greatest discovery that has recently been made in baking, for it renders the flour of even new wheat, fit for immediate consumption.

It is proper here to observe, that the value of the farina, when converted into jelly as food, has not been sufficiently appreciated. It thus undergoes a chemical process, which seems greatly to augment its nutritive powers. This may be partly owing to the farina being cleared of that dark and bitter liquid with which it is originally impregnated, instead of which, it is incorporated with pure and wholesome water, all the particles of which, when gelatinized, become converted into animal matter, by the effort of the stomach*.

2. *The Fibre.*—The fibre of the potatoe is of much inferior value to the farina. At 1d. per pound, 1350 lbs. of fibre would produce £5. 2s. 6d; and at ½d, £2. 16s. 3d.

With a mixture of wheaten flour, it makes excellent household bread or pudding, and is likewise applicable to various other useful purposes; for, thoroughly washed, it may be given to cows or pigs, and, if dried, to horses.

3. *Value of an acre of potatoes compared with wheat.*—The value of an English acre of potatoes, therefore, the farina at 3d. per lb. and the fibre at 1d. is £40; at 2d. per lb. for the farina, and 1d. per lb. for the fibre, amounts to £28. 10s. 1d. and at the low rate of 1d. per lb. for the farina, and ½d. for the fibre, would be £14. 5s. 6d.

"The Scotch acre is one-fifth more than the English, consequently it would produce, at 3d. per lb. for farina, and 1d. per lb. for fibre, £48; at 2d. per lb. for farina, and 1d. for fibre, £34, 5s; and even at 1d. per lb. for farina, and only ½d. per lb. for fibre, £17. 2s. 6d.

Wheat, that great object of the farmer at present, can bear no comparison with a crop of potatoes in point of value. Stating the produce at 24 bushels per English acre, and the price at even 7s. per bushel, it would only amount to £8. 8s. per English, and £10. 18s. 2½d. per Scotch acre, to which from £2. to £2. 10s. per acre may be added as the value of the straw. But still the value of a crop of wheat is inferior, and in many cases cannot be obtained without a previous year's fallow; while during its growth, it is unfortunately liable to numerous risks, from insects, diseases, precarious harvests, &c."

We add the following from a letter in the *Inverness Courier*:—

"SIR.—Since I last addressed you, I got bread made of the several ingredients after mentioned, in respective proportions following, viz.

* Hence those preparations of vegetables, which gelatinize the greater quantity of water, will be found to afford the largest proportion of nutriment, and are consequently the most beneficial to mankind. See a paper by Mr. William Skirmshire, jun. of Wisbech (*Nicolson's Journal of Natural Philosophy*, vol. xxi, an. 1808, p. 186), on the Fecula of Potatoes, &c. It is said that the water imbibed by the potatoe when boiled, is likewise pure and wholesome, but then *it is not gelatinized.*

SECTION VI.

Difficulty of giving Children Purgatives.

No person, except a mother or nurse, can conceive how distressing is the task of giving infants medicine. With my own children, I have tried every way to administer medicine, but failed to do so without much opposition, even to such a degree as to cause me to apprehend the bursting of blood-vessels. I have now, however, an admirable preventive. During my prac-

1. Two parts of barley-meal, and one part of potatoe flour. This compound is far superior, in taste and quality, to bread made of barley-meal alone, and is much cheaper.

2. Equal weights of potatoe flour, mashed potatoes, and wheaten flour. You have the evidence of the "Wester Ross Farmer," that this compound is "*excellent.*"

3. The same with a very little butter, which improves it considerably.

4. Two parts of potatoe flour, and one part of wheaten flour. Very good bread. It is 44 per cent. cheaper than bread made of wheaten flour, and nearly 3 per cent. cheaper than oat bread; but 13 per cent. dearer than barley bread.

5. Potatoe flour alone. This bread is also very good. It swells in baking, and is palatable and nutritious. By baking, I mean what is, in *Scotland*, denominated "firing."

6. The same with a little butter, by which it is improved.

7. Two parts of potatoe flour, and one part of oatmeal. This compound makes good and substantial bread, far superior to bread made of oatmeal alone. It is 27¼ per cent. cheaper than oat, and 13 per cent. cheaper than barley bread.

8. The same with a little butter. This compound is crisp and delicious. I propose to give it the name of "*The Poor Man's Short Bread.*"

The several sorts of bread above mentioned were prepared in the shape of scones or cakes, and were baked or fired in the ordinary way. Care was taken to turn the cakes often, and to fire them quickly.

From these experiments, it appears to be sufficiently established that very good bread, in the shape of cakes, may be made from potatoe flour *alone*, and of that ingredient mixed, in *any* proportion, with any of the farinaceous substances in common use.

It was my intention to have made further experiments, with the view of ascertaining how far potatoe flour might answer for fermented bread; but having received, on authority of unquestionable respectability, evidence of its being well adapted for that purpose, I deemed it unnecessary to perform them. A lady, of considerable experience in house-keeping, has informed me that she has made loaves and biscuit of this flour; and I have learnt, that in the family of a highly respectable Baronet in the Highlands, the practice has lately commenced of making *loaf-bread*, of three parts of potatoe flour, and one part of wheaten flour. I have the testimony of a consumer of this commodity, that it is considerably superior to the *best* loaf-bread, made of wheaten flour alone. For the last few weeks, it has been constantly used in the family of the honourable Baronet.

tice, I have found, where I have not had barley, or where it has not acted, that all stout children have been habitually costive, and that the most desirable medicines, viz. castor oil, rhubarb, senna and salts, &c. a child would not take, however agreeably presented. What was to be done? Compulsion was dangerous, and if the bowels were not opened daily, there was a chance of accession of fever. In this dilemma, I administered a glyster daily, composed of half an ounce of castor oil, and half a pint of warm water. This never failed to produce a copious and a healthy evacuation. I continued to give it until the bowels were brought by habit, thus artificially produced, to act of themselves fully and freely. This system is most pleasing to the infant, who anxiously looks for it. The injection of the warm water in the bowels, I fancy, produces a comforting emollient sensation, and, as soon as it operates, relieves the bowels of much tension and load. Let my readers, however, bear in mind, that I am speaking of a child in health, and that I am on the subject of *prevention*, and not of sickness, where medicine must be given by the mouth, the only way by which we can excite the bile, and cleanse the stomach, as directed in Part III. of this work. Another great means of prevention, in guarding against the excessive hot months before alluded to, is to regulate the dress.

SECTION VII.

Dress.

I must now mention a point which is seldom noticed. I allude to that state of the body which is best fitted to oppose the effects of heat. Let us suppose that we are in a room, and the thermometer stands at 100°. We should fancy that we were ready to die from the high temperature. But, if we ask a person in the same room what are his sensations, he will probably answer, that he does not feel it particularly warm, while we ourselves are sensible of such a dry, parched skin, and dry tongue,

that we are ready to drop under our feelings of oppression. Of two persons of such different sensations, we usually say, "one is of a cold constitution, the other of a warm;" but the fact is, both constitutions are alike, but the dress is different. The person not sensible of the heat is clothed next to his skin in flannel, which keeps up a moisture on the skin, and prevents a sensation of excessive heat; his temperature is natural, while the other, not wearing flannel, has nothing to excite moisture on the skin; so that the degree of the thermometer was actually the degree of heat which he was suffering. We infer from this fact, for it is not theory, that flannel is a preventive.

It has been a matter of dispute from the earliest ages, what quantity of dress a child ought to wear in Europe. The old ladies would be highly indignant, if they were restricted in the allowance of clothing, even though it were the height of summer. If a child were not always covered, not only with flannel, but likewise many other coverings, and especially the head, which has on a heavy thick linen cap, and a pretty little velvet hood also, with a fine plume of ostrich feathers; besides this, a great coat, and the edges of both are covered with white fur; and, indeed, should the dear infant be going very far in the open air, a scarf is thrown over this, and besides, a silk handkerchief, and a bit of flannel round the neck; all to prevent the babe from catching cold: and on its return, the first enquiry is, "O dear! does the little darling feel cold?" It is natural to suppose the nurses invariable reply: "O no, Ma'am; as warm as a toast!" It is ludicrous to observe, how this mistake in the use of precautionary measures prevails both in England and in India, and above all parts of the body, the head generally suffers from it, since it is the very part which ought to be uncovered as much as possible. If it should so happen that a child has a cold, there are blankets and shawls, and all descriptions of dress put in requisition; and it is a wonder, indeed, if the infant's face is discovered. I have often been called to visit children in this state, and thus attired, when I generally hear something

like the following: "O Doctor! my dear little Charley has got such a cold! and how he got it, is impossible to tell, unless it was from the water being too cold in which he was bathed; or I have neglected to put on him sufficient clothing; or it may be from the nasty, raw, easterly wind, which has lately prevailed; or from taking him out too early in the morning, or bringing him home at too late an hour in the evening; or, indeed, I should not wonder if the servant has taken off the dress when the child was in a full perspiration, to change the sweet pet when it was wet, and so the perspiration has been checked." Now this is the result of over-dressing; and when I recommend that flannel be worn next to the skin, let it be understood, that at the same time, I dissuade from the use of other clothing, except the very lightest dress over the flannel, and *no caps of any description: we must keep the head cool;* because the first determination is to the head, as will evidently be perceived by referring to Part II. of this work. A light lace cap is allowable for the first three months; after which, however bald the child may be, I dissuade from their use, unless the child be taken out in the air; and even then, the lighter the cap the better. From checks of perspiration, injuries more serious than a mere cold may arise.

Our object must be to keep up a *moisture* on the skin, not a *perspiration*, and when the child's dress is changed, to avoid currents of air, or prevent the wind from blowing upon the naked body. My readers will find a description of dress suitable to prevention in Part I.

I shall now proceed to an equally important subject, which is to show the effects of human passions in moderating or aggravating disease, and how to prevent them.

SECTION VIII.

The Influence of the Mind over the Body.

It is not my intention to enter into any metaphysical inquiries concerning the mutual relation subsisting be-

tween the mind and body, and the influence which one has over the other. It is sufficient to our present purpose, that the fact of such relation and influence is indisputably established by universal experience. I could adduce from writers, both ancient and modern, many interesting particulars tending to illustrate the fact, and showing the opinions which metaphysicians and physiologists have entertained upon the subject; but while I might thus contribute to the amusement of my readers, I should not promote the design which I have in view in this section.

The exercise of the powers of the mind, we may regard as having an influence in the prevention of diseases. When a child has passed his third month, his mind begins gradually to be manifest. If it be kept in a state of constant cheerfulness, the blood freely circulates through every limb, a proper degree of perspiration is kept up, while the bowels and whole glandular system continue in a state of healthy action, a tone to the stomach is given, and the whole constitution is strengthened. On the other hand, if a child is neglected, and has an angry or peevish nurse, and is not indulged in all the little vagaries and antic tricks of the nursery, with the merry song and dandling of the arms, it becomes slothful, peevish, and sinks into general disease. Recreation and amusement, will even divert a sense of pain from the mind. It is known, that in case of the tooth-ache, if we allow our minds to dwell upon it, the pain becomes intolerable; but if our thoughts are employed upon other subjects, and we behold the operator ready to extract it, we are not so sensible of the pain. If this be true, and few I think will deny it, it must afford relief to the infant during dentition, to have some one to play with and amuse it, and when suffering under any pain whatever, relief may be afforded in the same way. It is natural in all animals to be sportive when young; children have the same natural propensity, which cannot be denied indulgence without the danger of injuring both mind and body. But while cheerfulness and a happy state of mind are to be promoted, particular care should be taken not

to excite, and when excited to overcome, as soon as possible, every evil passion.

SECTION IX.

Anger, Hatred, and Malice.

It is a fact, supported by abundant testimony, that these passions are productive of disease. It has been related by good authority, that "the bite of an angry man makes mad." Ganbius narrates a case of an Italian boy, who on being provoked, and unable to revenge himself, bit his own finger, and died of symptoms similar to those of hydrophobia. Disturbances of the mind, therefore, seem peculiarly to act upon the saliva. There are instances in which anger in a dog acting on his saliva, without himself being mad, has by his bite induced hydrophobia. In the Transactions of the Chirurgical Society of Amsterdam, a case is related of a dog, which being provoked by a boy, bit him on the left foot, from which the boy was seized with hydrophobia, and died after three days, the dog remaining in good health. Sudden and desperate attacks cause violent determination of blood to the head, and sometimes instant death. Waller was of opinion, that apoplexy was induced by an impulse of blood to the head. Ganbius was of the same opinion. Parsons thought it was owing to the blood being determined to the extremities from the heart. Dr. Cullen concluded that sudden relaxation succeeded an overstrained exertion, producing a loss of tone which the system cannot recover. Hoffman was of opinion, that nothing could so soon excite a billious or inflammatory fever as violent anger. Dr. Brahier mentions a woman being seized with a fainting fit in consequence of violent anger against her child, under which she expired. Van Swieten infers, that to show the baneful effects of anger on the constitution, which often has its foundation in malice, hatred, jealousy, and revenge, all we have to do, where those detestable passions are not even previously excited,

is to offer an affront to one who is quite calm and undisturbed, what change does it make on the whole system! "His heart beats quicker and stronger, his face swells, his eyes sparkle, and even a fever will sometimes follow, and endanger death." The same writer ascribes the effects of anger to the heart being strongly contracted by the action of the brain, producing too great an influx of nervous fluid by this passion in the mind. One of the greatest proofs, however, of the action of anger on a child is,—let a nurse be angry, and give her breast to the child, it will suck a poison, instead of nourishment. An infant, indeed, is more susceptible than an adult, and anger is almost the first passion manifested in the child. I have seen their little vessels distended to the utmost with rage, and all the coaxing which could be used, even the breast, would not pacify them. It does not require further evidence to show, that if the effects of anger are so dangerous to the adult, they are equally so to the infant. Let us then enquire more into their deleterious effects.

SECTION X.

Deleterious Effects of the Passions.

There is but one way of preventing the baneful effects of the passions, and that is, by moral education. An eminent writer has observed, that "all passions, of whatever kind, if they rise to a high degree, have a dangerous tendency; bodily disease, nay, death itself may be their concomitant effects. Fatal apoplexies have frequently followed sudden dread or terror. Catalepsy and epileptic fits not rarely accompany immoderate affliction, or distressing anxiety. Hypochondria, hysterics, and habitual dejection, may indeed arise from a variety of physical causes; but they are as frequently generated by the passions or sufferings of the mind alone, in other individuals otherwise healthy. Diseases of the mind, after some time, produce nervous disorders of the body, as diseases of the body often terminate

in mental disorders. In either case, the malady must be opposed by physical as well as moral remedies. It is only by the constitution and education of the body that the passions may be rendered useful; for if uncontrolled, and left to themselves, they affect us as a tempest does the ocean, without our being able to counteract their pernicious influence. Since all affections whatever consist in desire or aversion, they must necessarily be accompanied with representations of so lively a nature, as to induce the body to perform motions conformable to them. Consequently, the affections must also be accompanied by sensible motions within the body, not only by voluntary action, but by those also which contribute to the support of life, and which are more or less violent according to the degree of the affection. Joy, for instance, enlivens all bodily actions, and, as it were, pervades the whole animal frame. Hope has nearly a similar effect, and these two affections contribute to the preservation of health and life, more than all the medicine that can be contrived. But of the other affections of the mind, we can in most instances, observe scarcely any other effect than that of irregular motions, which, not unlike medicines, in a limited degree and under certain circumstances, may be occasionally useful. *Hence the dominion over our passions and affections, is an essential and indispensable requisite to health.* Every individual indeed is, at his birth, provided with a certain bias of the inclinations "to evil." The most tender infant may even discover, by his features and gestures, faint traces of the predominant inclinations of his mind. If these be fostered in his susceptible breast, they will grow up with him, and take so deep a root, that the adult cannot, without the greatest exertion, overcome them by the power of reason. The physical state of the body is most happy, when the mind enjoys a moderate degree of gaiety, such as is almost universally met with in those who regulate their lives by the strict rules of religion and virtue. The circulation of the fluid, the influence of the nerves, and a free perspiration, are carried on with proper vigour. Stagnations are prevented or removed: by this lively and uniform motion, not on-

ly digestion, but also all the other functions of the body, are duly performed."

The above are the sentiments of all medical authors. I shall now proceed to consider the means of prevention.

SECTION XI.

Prevention on the Body.

On this subject the minds of the most able physicians have been employed, and prize essays have been written. How any specific mode of treatment, however, can be pointed out, it is difficult to perceive: the temperament of every individual being different from that of another, it will require a peculiar and distinct mode of treatment. Circumstances must determine the proper mode. Every one in the habit of treating diseases of the body, which are either the cause or effect of mental aberration, knows that the mind must be as much the subject of treatment as the biliary organs; and in order to produce a proper effect by medicine upon the latter, the former must be in a state of sanity. Fearful thoughts of dying may counteract the influence of medicine, and aggravate disease: and on this account the introduction of a clergyman to patients who are dangerously ill, if they had not been in the habit of visiting them when in health, is not likely to promote the object of a physician, as such an event might excite frightful apprehensions of dissolution. Such is the received opinion; but to say that the soul, on the brink of eternity, does not require our more immediate care than the body, is equivalent to a declaration that there is neither a God nor a judge; and it becomes an awful responsibility on the part of that medical man who places himself, from unbelief or ignorance of the gracious atonement, between God and his patient, and thus prevents a reconciliation through a mediator and a Saviour. To prevent false deductions, and to dispel this vain prejudice, how expedient is it that clergymen cultivate a familiar and friendly acquaintance with the whole circle of their parishioners, that their visits to those who are

sick among them, may have more the appearance of a friend and acquaintance, than a messenger sent for the special purpose to prepare the patient for death. In this way, indeed, the clergyman, by his friendly and soothing conversation, may not only tranquillize the mind, but by doing this, may facilitate the medical operations. To first compose the mind, is the best way of treating the body; and then calomel and purgatives may be administered, and counter-irritability excited by blisters along the spine. It is not necessary for a physician to know what the mind is, or to apply metaphysical reasonings to his patient; if he be called to a patient suffering under a violent fever, and tormented with the fear of death, he will not refer to Locke, but with the usual remedies, will soothe the mind of his suffering patient, and smooth his pillow, so that he will lay his head in quietness: this is to know the mind. The tender-hearted Goldsmith adopted a very happy expedient, when called to a patient suffering under a violent fever: he found the cause to be distress of mind on account of his penury, and anxiety about a surrounding, starving family. Our physician sent him a pill-box containing a few guineas, with directions to use them as occasion required. This was to know the mind and the body too!

Paracelsus says: "The body is a house, and the mind its inhabitant; so that, if any thing is amiss, the house must be cleansed or reformed. Let the windows of the house be clear, and the inhabitant will see; and when he sees, we are to remove all horrid spectacles from his sight, and put in their place things that are pleasant and cheering." It must, however, be remembered, that we may, in the words of Epicharnus, "recommend persuasive argument and mathematical diagrams to cure a melancholy patient; but nothing will do till the mind be purged."

However, for our little patients, we do not require arbitrary remedies. We must cure their irritability with gentleness. When a child is peevish and fretful, and shows signs of passionate, revengeful, or malicious disposition, try the stomach and bowels, and see whether

the cause be not there, or in a difficult tooth. Alterative doses of calomel and purging mixture will be sufficient: as the house, according to Paracelsus, becomes cleansed, so will the child become cheerful, playful, and kind. Or, on the contrary, if it is in the nature of the child to be more vehement and passionate than is right, nothing will do but moral education.

SECTION XII.

Moral Education.

After what has been said on the influence of the evil passions, little need be said to show the importance of beginning early to instil into the infant mind that knowledge which will counteract it. Children should not only be governed, but should be taught to govern themselves. "He that is slow to anger is better than the mighty, and he that ruleth his spirit, than he that taketh a city." The observance of this proverb will be found to be of great practical use, so far as the child's individual peace and the preservation of its health are concerned. But it is not my intention to prescribe rules for the treatment of the mind; though I do not hesitate to remark, that in my opinion, early religious education, and encouragement to habits of piety, united with all seasonable juvenile recreations, will tend to promote a cheerful and happy temper of mind, and defend the constitution, both from a vicious and sickly taint. While children are taught religious knowledge, let it be done in a cheerful and exhilarating manner; for religion to man is a boon, not a sorrow. I have taken upon myself in the Appendix to lay down a system of moral education, by which the young mind may be trained up in an interesting manner into the ways of God, which are pleasantness and peace: and, with his blessing, the heart and the soul, thus instructed in infancy, will not turn away in old age, and the consuming passions of hatred, malice, envy, &c. will be subdued.

I shall now proceed to show the preventive effects of Bathing.

SECTION XIII.

Bathing.

There is no subject of more importance than the one we are about to consider, and none which has been more litigated. Opinions have varied on the temperature of baths, deemed essential either as preventive or as remedial. The Greeks, Russians, Italians, French, and Indians have advocated in the strongest manner the hot and vapour baths, to the exclusion of all others: while Britain, until lately, stood forward with her hardy sons, boldly exhibiting inflexible muscle and ruddy fronts, as proof of the invigorating results of cold bathing.

We have been from our boyhood in the habits of witnessing groupes of scholars, and young and old, marching in procession towards some fine river, or to some well-selected spot in the blue ocean. The eye sparkling with delight at the plunge before the fearlessness of youth, and the limbs in ready energetic motion for the unceasing gratification of the swim, the fun, and the frolic. In vain should we stand before such a groupe, on the point of such an indulgence, and denounce danger and death, and demand our youth to turn into vapour and smoke: we believe that we should not long stand to demand, but we should soon meet with plenty of contempt, pelting, and hooting. But such fearless advocates have lately stood forward in support of hot and vapour baths, in opposition to those of the lower temperature.

That the favourable opinion on the efficacy of the cold bath should recede on this more recent introduction of hot baths, is natural enough, when we remember the love the philosophic world has all along felt for novelty. It will have its day; and when the novelty is no longer felt, will dissipate in its own vapour. Britain is more Parisian in all her customs, no longer Britain now. The luxuries of the east, and the voluptuousness of effeminate nations, dress both her sexes. The plain garb, simple fare, and unassuming manner no longer distinguish and adorn our native land. We no longer see what Goldsmith's

Traveller so deeply felt, and the scenes his Deserted Village so beautifully depicted.

It is not my intention, however, to deprecate the hot bath. What shall I say against the authority of Marteau, Maret, Macquart, Cochrane, Kentish, and many others, who advocate them as invigorating and strengthening,—who instance the Romans as dedicating their warm springs to Apollo, and to Hercules, the god of strength; and Suidas Eustatius, who made use of the term *balnea* Herculea as synonymous with warm baths. I am neither opposed to the hot nor to the cold; I am a strong advocate for both: but when I say this, I would confine my expressions to peculiar circumstances and periods. The universality of the use of the hot bath in Russia, as a tonic, only substantiates and proves the principles which I have all along set forth as to the effects of heat and cold.

The moderate application of stimulus doubtless increases the strength, where the climate is intensely cold, as in Russia. In like manner, the moderate application of cold will lead to the same end, under the exhausting heats of India. The adoption of the hot baths in the temperate climate of Greece and Rome, or in Hindoostan, is no testimony against this assertion. Baths of high temperature were only in occasional use as a remedy, either as a powerful cleanser and opener of the pores of the skin, or as a gratification to effeminate voluptuousness, with which those ancient cities and our eastern countries have abounded. As a remedy, hot and vapour baths are inestimable. Let us conceive a languid, obstructed circulation, a dry skin, partaking of a warm or vapour bath. The result must be a removal of all those symptoms. The languid circulation would produce torpor, head-ache, lassitude, and a train of most unpleasant symptoms; but no sooner would the circulation be promoted, and the pores of the skin expand, and filthy humours discharge themselves, than the body would feel relieved, as it were, of a vast load, the mind would be exhilarated, and energy, together with feelings of refreshment and delight, would indisputably be the consequence.

On the contrary, if the body had been long oppressed by heat, and the skin continued hot, and the constitution wearied, as it were, no longer would the hot bath prove beneficial: we shall now experience the renovating and tonic effects of the cold bath. But my readers will enquire with astonishment: What! use a cold bath with a hot skin! This is contrary to all principle; for I have also said, that the extremes of heat and cold are dangerous, and the danger is owing to the suddenness of change. True, but the effects of sudden immersion with a hot skin into a cold bath has a very different effect from sudden changes of atmospherical variation on a perspiring skin. No sooner do we plunge into the bath, than the blood circulates freely to the surface, and the pores open. But no sooner does a sudden blast of cold moist air come upon our perspiring skin, than we sink under it. Had the skin been dry, the sudden blast would have done us no injury; on the contrary, we should have felt refreshed.

The only danger of sudden changes is check of perspiration. As proof of this, instances are mentioned, where Sir Charles Blagden* and Dr. Fordyce went into a room heated 200°. Dr. Dobson of Liverpool did the same, and immediately came out into cold air with impunity. Mr. Park† assured Dr. Currie, that after remaining some time in a stove heated as high as 202°, he went into the external air without a great coat, or any other than his usual clothing, during a hard frost, and perceived neither injury nor inconvenience. Besides, it is the common practice of the Russians of passing from a hot bath to roll naked in the snow; and it was a habit of the Romans to pour cold water over the body immediately on emerging from the hot bath.

Surely, therefore, all these circumstances, these facts point out, that from heat we may experience the greatest degree of cold, and that with the skin heated as it is in India, the cold bath is pointed out as expedient and as remedial.

* Phil. Trans. vol. lxv. † Currie's Med. Reports.

While we can go, (I am speaking from experience,) with excessive dry cold skins into high temperatures, and from high temperatures into excessive cold, we dare not go with cold skins into a bath of a lower temperature. The effect would be a collapse; and as a perspiring skin, according to my principles, is equivalent to a cold skin*, at that period a cold bath would be both pernicious and dangerous. To what conclusion, then, does this bring us? that cold bathing is remedial, preventive, and expedient in India: not so always in Russia, or other parts of Europe, where to produce a warm skin previous to immersion in a cold bath, as a cold skin is dangerous, a previous dipping into a warm bath is admirably calculated; and with this effect we may plunge into the coldest water with impunity, and experience all the tonic and delightful refreshing feelings which cold bathing produces.

Having established the advantages of cold bathing in infants, I shall proceed to shew the effect as preventive of disease in India.

I have already shown how many are the diseases, and how acute and awful are their accession from checks of perspiration. If I can prove that bathing prevents the danger of alarming checks, I shall certainly establish it as most important and desirable.

We are already informed, that the humours of the body in great proportion escape by the pores, especially the excretions of fœces and urine†: and indeed, by this admirable disposition in the organization of the body, both obstruction and alarming disease are prevented. The apertures of the pores are, therefore, much greater than it is usually supposed, and these are often filled with rather condensed excretory matter, unless by cleanliness, or in other words bathing, the matter is daily removed. Now if a check of perspiration, from sudden blasts of wind on a skin already partly obstructed from excretory accumulation, should ensue, the result must be obvious.

The other effects from these cuticular lodgments are filthy eruptions, malignant abrasions, as well as very of-

* See page 98. † See page 98.

fensive exudations, extremely disagreeable to the child, and to those who approximate to children thus neglected. Bathing prevents all these.

Again, I have hitherto shown the power of those vessels called absorbents. Now if the excretory morbid humours are permitted to lie upon the surface, it follows, as a matter of course, that they will be re-absorbed. The production of disease from such absorption is certain, and the necessity and utility of bathing, as a preventive, therefore, indisputable. I shall now proceed to show the best manner to be adopted for bathing.

The advantages the infant constitution may obtain from bathing will depend upon the time a child is retained in the water, as well as the exercise of the body during the operation. I propose therefore that the bathing-tub shall be at least 7 feet in length, 4 in depth; that this be filled to within one foot of the top. The nurse and the child are to bathe together in the water; the nurse holding the child on her lap in the water, and rubbing well the body and the limbs, and likewise shampooing them. After this operation, as much playing about in the water as possible is to be encouraged. Both nurse and babe may remain in the water twenty minutes. Previous to immersion in the cold bath, the limbs and body of the infant are to be well washed in soap and hot water; and while the body is yet warm from the hot washing, is to be immersed in the cold bath, the nurse entering simultaneously: there is no danger of driving back the milk, as is generally supposed. On the contrary, the fine tonic effect, as well as excitement given to the circulation of the blood, will materially increase the quantum of milk. I recommend the cold bathing from the 1st of March to the 1st of November.

It will be now necessary, for the sake of cleanliness, to commence on the 1st of November, and continue to the end of February with the warm bath.

Unfortunately proper baths are to be seen in scarcely any house. I propose that every dwelling should possess one after Count Rumford's recommendation, (provided families are not in those situations where these cannot be

built, the tub before mentioned must be put in requisition.) The following is the description of the bath alluded to, and which will always be found of value, attached to any house where warm bath is recommended in cases of sickness. "Let a small building be erected, fourteen feet five inches long, and nine feet wide, and seven feet high, measuring within; and let it be divided into equal rooms of nine feet long, and seven feet wide each, by a wall of brick four inches and a half wide, or equal in thickness to the width of a brick. Let the outside walls of this little edifice be double, the two walls being each the width of a brick in thickness, and the void space between them being likewise of the same thickness, viz. about four inches and a half. In order to strengthen these double walls, they may be braced and supported one against the other, by uniting these in different parts by single bricks, laid across, with their two ends fixed in the two walls.

"Instead of a floor of boards, these two little rooms should be paved with twelve inch tiles, or flat stones, laid in such a manner, on their parallel walls, (four inches and a half in thickness,) as to form horizontal flues under every part of the pavement.

"There should be no door of communication between these rooms, but each should have its separate entrance from without, by a door opening directly into a separate narrow descending covered gallery. These two doors should be placed on the same side of the building, and their two separate descending galleries may be parallel to each other, and may indeed be covered by the same roof: they may together form one gallery, divided into two narrow passages by a thin partition wall, constructed with bricks. A small porch at the bottom of the gallery should be common to both passages; but each passage should, nevertheless, have its separate door, at its lower extremity, where it communicates with the porch. The top of the doorway of this descending passage, at its lower extremity, must be at least one foot below the level of the pavement of the rooms. This passage may be

furnished with a flight of steps, or its descent may be made so easy as to render steps unnecessary.

"If there should be no natural elevation of ground at hand, on which this bath can conveniently be situated, a mound of earth must be raised for that purpose, otherwise it will be necessary that the porch at the end of the gallery should be situated seven or eight feet below the surface of the ground; for it is indispensably necessary that the entrance into the bath should be by an ascent, and in a covered gallery.

"The building may be covered with a thick thatched roof, which will, on some accounts, be better than any other; but any other kind of roof will answer very well, provided it be tight, and that a quantity of straw, or of chaff, or of dry leaves, be laid over the ceiling of the two small rooms, under the roof, to confine the heat. The ceiling of the rooms should be lathed and plastered, and the walls of the rooms should be plastered and white-washed.

"At the end of one of the rooms, opposite to the door, a bathing-tub should be placed, and in the other a cane sofa. The bathing-tub should be placed on a platform seven feet square, covered with sheets of lead, and raised about nine inches above the level of the pavement. This platform should have a rim all round it, and a pipe for conveying off, out of the room, the water that accidentally falls on it. The bathing-tub should be supplied with cold water from a reservoir, (a common cask will answer perfectly well for that use,) which should be without the house.

"The water should be admitted cold into the bathing-tub, and should be warmed in it, by means of steam, which may come from a small steam-boiler, which should be situated without the building, and near to the reservoir of cold water. A small open shed, made against one side of the building, (that side of it which is opposite to the entrance gallery,) may cover both the boiler and the reservoir. The boiler, which need not be made to contain more than six or eight gallons, should be well set in a brick wall, and well covered over with bricks, to

prevent the loss of heat, which would result from any part of the boiler being exposed naked to the cold air of the atmosphere. This boiler should be fitted up, by means of a ball-cock, so as to feed itself regularly with water from the neighbouring reservoir.

"The boiler should be furnished with a safety-valve, opening into the open air, and with a tube for conveying steam into the bathing-tub. This tube, which may be a common leaden pipe, about half an inch in diameter, should be wound round with a list of coarse cloth, or with any warm covering of that sort, to confine the heat. This steam-tube should rise up perpendicularly from the boiler to the height of eight or ten inches above the level of the ceiling of the bath-room, and should then be bent towards the building, and made to enter the roof of it, and to descend perpendicularly through the ceiling of the bath-room, and enter the bathing-tub. Its open end should reach to within an inch of the bottom of the tub; and, a little above the level of the top of the tub, there should be a steam-cock, by means of which the passage of the steam through the steam-tub, and into the water in the bathing-tub, may be regulated, or prevented entirely, as the occasion may require.

"There may be a short branch, six or eight inches long, into the steam-tub just described; which branch will serve for admitting steam into the room, when it is designed to be used as a steam, or vapour bath. This short branch must of course be furnished with its own separate steam-cock.

"The smoke from the (closed) fireplace of the boiler must be made to circulate under the pavement of the two rooms of the bath, in the flues constructed for that purpose, before it is suffered to pass off into the chimney. The chimney should stand on the outside of the building, and be made to lean against, and be supported by the wall of the building. There should be a damper in this chimney.

"Each of the small rooms should be furnished with a small double window; each window consisting of one large pane of glass, and being made to open by means of

a hinge, placed on one side of it: these windows should be placed as near the ceiling of the room as possible, in order to facilitate the perfect and speedy ventilation of the bath. The inside windows may be placed level with the inside of the wall of the house, and the outside windows level, or flush, with the outside wall; either the inside windows or the outside windows should be made of ground or of wavy glass, in order that a person in the bath may not be exposed to view through the windows.

"The two small rooms may be distinguished, by calling one of them the bath-room, and the other the dressing-room.

"If it be required to heat the two rooms in a very short time, the one with vapour, and the other with dry air, equally warmed, and perfectly free from all disagreeable smells, this may be done by the following simple contrivance. Let a cylinder of very thin copper, about eight inches in diameter, and five feet in length, be placed horizontally under the sofa in the dressing-room, and let a steam-pipe from the boiler be laid into it, with another pipe for carrying off the water resulting from the condensation of the steam in it. By admitting steam into the tub, the air in the room will soon be warmed, without any watery vapour being mixed with it; and by admitting steam into the bath-room, and allowing it to mix with the air of that room, a vapour-bath will be formed, and in a very few minutes will be ready for use."

A most valuable and curious discovery of Count Rumford is, that the popular notion of danger, from catching cold after the warm bath, is utterly groundless. The contrary is really the fact, since the use of the warm bath arms the system no less against the immediate sense, than the ultimate injuries, commonly experienced from exposure to cold. See Essay XII. p. 430.

SECTION XIV.

Exercise.

That inaction or indolency induce to morbid accumulation and predisposition to disease, is incontestible. To retrograde to the old school, and talk of viscidity of humours induced thereby, would, in the present refined language of medical pathology, undoubtedly induce the exclamation of Shame! Notwithstanding, I do believe that the glandular system is first affected, these secretions become viscid, and the pores of the skin are as a consequence obstructed. What pathology shall we call this?

The effect of inactivity or indolency of habit is exhibited by the circulating fluids becoming torpid and languid in their circulation, and inducing to determinations, which being progressive, disease is at length exhibited, though insidiously; for the latent seeds had been concentrating, but are now demonstrated with virulence, either in fever, in liver, or determination to the brain.

In the time of the learned Hippocrates, physicians were aware of the diseases arising from indolency of habit: and we find Herodicus, when luxury and idleness took the place of sobriety and labour, introducing the art of medicinal gymnastics for the preservation of health, and the prevention of sickness. Hippocrates advocated the art, and he treats of exercise in general in his book on Regimen. He considered it belonged to the medical profession to proportion to different constitutions, ages, and sexes, the degree of action necessary to the preservation and establishment of health.

It is strange, that, during the times of ancient Greece and Rome, though famed for polished civilization, learning, and genius, every event was ascribable to some superstitious notion in the figure of an idol or a god; and there existed few minds of sound and rational understanding. In this respect, let me instance at the period of the zenith of the glory of Greece, and of her greatness: luxury and indolence had caused among her inha-

bitants the height of pestilence and disease; for they had ceased from the salubrious exercise which was promoted by the Olympic games, a cause of health so manifest to the Grecians, that they appointed gods over them, in order they might be worshipped. The public and solemn games were therefore held sacred, not only because they were, as I have mentioned, instituted to the gods, but because the exercise had evidently tended to strengthen and afford agility and velocity to the body, inspiring the mind with firmness, patience, and contempt of death: the body became inured to hunger, thirst, and every kind of bodily suffering, without the slightest uneasiness or sense of pain. The quinqeetion, or five exercises, namely, leaping, running, throwing, darting, and wrestling, were, previous to the fall of Greece, or let me say, ere luxury had gained her ascendency, in great esteem among the ancient Grecians; but sloth and indolence followed in time, with luxury and vice, and then we find pestilence sweeping the inhabitants of the land away. The following singular reason was set forth, to rouse the people from their apathy and their indolence.

The body of Melicertes, the son of Athamus, king of Thebes and Ino, was cast upon the Isthmus, and lay there some time unburied, whereupon a grievous pestilence began to rage in those parts, and the oracles gave out, that the only remedy for it was, to inter the body with the usual solemnities, and celebrate games in memory of the boy. Upon the performance of these commands the distemper ceased: but afterwards, when the games were neglected, broke out again; and the oracles being consulted, gave answer, that they must pay perpetual honours to Melicertes's memory, which they did accordingly, erecting an altar to him, and enacting a law for the perpetual celebration of these games*.

The oracles in this instance evidenced much wisdom, in directing this slothful, voluptuous nation to resume a recreation, the effects of which are highly salutary and

* Archeologia Græca.

remedial, and doubtless was a means of removing the pestilence.

The ulterior benefit from exercise is on the body, as well as evidenced in the powers of the mind. Indeed the mind and body are affected with cheerfulness and hilarity, and the whole condition is, by its genial operation, under a renovating influence.

Let us figure to ourselves, that we have now standing before us two persons, one of an active, the other of a slothful habit: in the countenance of one we shall witness health, animation, a keen lively eye, a bold and cheerful countenance, with energy and strength. In the other stupor, weakness, sallowness, a sunken and sleepy eye, weeping and despair. These are lessons, to guard our dear children from such effects, and which, indeed, lay the seeds of the worst of diseases, as well as foster a sullen gloomy disposition.

Now Nature has given us every proof, that it is not her wish that children should be slothful; for as soon as a child is capable of crawling and walking, it is wonderful to observe their exertion; indeed they scarcely ever tire in running, crawling, and playing all kinds of antics. There are very few men could accomplish so much exertion in this way as the infant. A friend of mine related to me an instance of a gentleman, who took a bet that another could not follow a child through all its little tricks and exercises during one day, and it was found that the gentleman willingly resigned the bet as lost, after enduring the exertion only two hours. I hold this exertion to be of such paramount importance, as a means of preventing difficult dentition, that so soon as I see a child take to crawling about, or to its limbs, I do feel that the constitution has reached a point of safety, like a ship when she moors in some safe bay ere the storm has burst: and parents, as an invariable rule, ought, as of primary import, to allow no means to be neglected in obtaining so desirable an object. The way to obtain this will be, instead of keeping the infant for ever in the nurse's arms, to let them roll about upon the ground, and it will be found that they themselves will

be crawling away without any teaching. A child is in high spirits when thus situated, generally finding many little things to direct and interest its infant mind: and besides, it teaches independence and confidence. But the occupation of the mind is of infinite importance, and consequently, when a child tires of crawling, we may amuse them in a swing: when the latter has been enjoyed, a little room carriage will prove a favourable change. I know nothing which prevents the influence of heat so much as exercise; as it keeps up a regular circulation, and a fine perspiring skin. I shall now proceed to consider rest as a means of preventive.

SECTION XV.

Rest.

In as much as I have shown the importance of exercise, it follows as a consequence, that to enable a child to experience its remedial influence, rest is indispensable.

I have in the first part of this work pointed out the injurious effects of too much rest: and in the preceding section, the baneful result of slothfulness, which is thereby implied. By rest which is preventive, I mean in respect to its period and its length. Now I have shown, that the cheerful occupation of the mind allays irritability: perhaps sleep is the next to the foregoing in effect. But since heat is the great excitement, it will be expedient to apply the remedy during the hours of the day, when the highest temperature exists; this is from 12 o'clock to four in the hot weather. Now children ought to be amused by every contrivance in our power until 12, and then they are to be put to sleep, quietness being observed, and the bed being placed under a large punkah in a tattied room. It is most probable the dear infants will sleep till four, by which we expend in rest the most critical part of the hot weather.

I shall now proceed to consider Weaning as preventive, and then conclude this work.

Section XVI.

Weaning.

In conclusion, I deem it of the utmost importance to declare my opinion, that weaning a child at nine months is indispensable, as a means of preventing difficult dentition. This assertion of mine, I am aware, will astonish mothers who have reared large families; for it is the belief of such, that the breast is a certain prevention of danger during the dentition period; and they ground their reason for the necessity of prolonging the time of nursing until the eruption of the eye-teeth appear, from the conviction that the child is comforted, and irritability decidedly appeased by the breast. Allowing the effect of the latter, as to the means of prevention we are unequivocally opposed; but I shall leave it to their good sense to decide this important question with candour and deep consideration, before they finally declare themselves enemies to my system, or opposed to my arguments.

I am certain of this, I think, that the mothers who have perused my work attentively will acknowledge their interest, their comfort, and their health, together with the welfare and removal of suffering from beloved infancy, has been my aim, nay my sole object: they will, therefore, give me a friendly kind hearing.

It is true, that in this section I am aiming at two grand objects; first, the health of the mother, as much as that of the child. If I am blessed with success in being the means of preserving both, the pain of the opposition I anticipate to my opinions will vanish before the pleasure I shall ultimately be afforded. But to advert to my reasons for weaning a child at its ninth month. All mothers will grant, that when an infant has attained that age, the faculties of conception, or rather I would say, the understanding of a child is not so perfect, and that this seperation is scarcely felt by the infant; but the novelty of feeding is readily accepted, and often so desirable, that the child will ordinarily reject the breast, and turn to the

spoon. On the contrary, as the child advances into its twelfth month, the understanding is nearly complete; and so perfect is it, that its knowledge of things, and judgment, are truly astonishing, and the weaning of a child at that period, when the breast has become a source of pleasure from habit, is truly painful, and attended often with danger: so that I grant, that, when the child has passed its ninth month, it is questionable when it can be weaned. The teeth are now rapidly appearing, the constitution is under one system of general irritability, and the babe peevish and irritable. It is evident, to separate an infant from the breast at such a juncture must be replete with danger, by admitting a new source of irritability to the child, and laying the foundation (by the sacrifice of so great a pleasure as the breast) of a source of grief, with which a child progressively pines away.

It is true, then, to wean a child after twelve months is dangerous. Now, let us suppose that the poor mother has not the strength to continue to perform so important an office; that from the debility hereby induced, she becomes predisposed to sickness; an accession of fever, or other disease, intervenes, and, as a result, by compulsion she must wean.

Now is the child left, perhaps, at this unfortunate moment cutting its eye or double teeth, in the height of irritability, at a moment imperiously demanding every comfort, but here suffering the sacrifice of its greatest.

What is to be done?

To send for a native nurse is an alternative which immediately suggests itself.

The woman arrives, after much search and difficulty, after the child has been screaming, and refusing every means of pacification; but is the cause removed by the arrival of the deputy? Nay; the child refuses the breast of the stranger; nor all the coaxing, nor means of deception will induce an infant ordinarily to take the breast of another person at the age we are now contemplating*.

* There are exceptions to this, I will allow: a dear boy of my own was one. My situation in the service rendering travelling from place to place unavoidable, and my infant being a melancholy sufferer from fever

What is to be done? escapes the lips of every one in the house. The poor mother is perhaps suffering under violent fever; her suspense and anxiety is increased, and the consternation and distress of the whole family is inconceivable, but by those who have experienced such scenes: and such, I lament to say, are often painfully witnessed by medical men, who in these cases are often compelled to acknowledge their inability to do more than to sympathize and condole in these poignant family misfortunes.

What is to be done?

Is an interrogatory, therefore, I regret to say, I am compelled to conclude with myself. I trust a preventive thus substantiated, is one great reason for weaning at the ninth month, when such danger may be prevented.

But let us suppose this danger of sickness did not accrue, we have another equally important reason for weaning on the ninth month: this is, that the milk is no longer of that nutritious nature after the twelfth month. I consider myself at this moment to be addressing mothers who have had many children, and to whom every subsequent event attending nursing is familiar: they know that the periodical menstruation returns about this time, and that it is intended by this sign of nature that it is time to wean. It may be urged, indeed, that that discharge continues with some females a slight degree during the period of nursing. I know it does, but let me add, it is out of the course of nature when this event occurs, and the mother endangers her constitution by nursing when it is present. In impregnation, we are aware that this discharge in women is intended for the nourishment of the fœtus in the womb; but no sooner is the infant born, than the determination of blood is no

and determination to the head, on the occasion of every eruption of a tooth: thus unsettled, (for he was on the blue ocean in a 100 ton brig, when he was nine months old,) I could not wean; I was, therefore, after a threatening of an apoplectic attack, compelled to procure a wet-nurse when he was thirteen months old. Having lost one dear infant from this determination to the head, I deemed it judicious to use the milk in preference to food, where such predisposition existed. But to the point: my dear child instantly took the nurse's breast.

longer to the womb, but to the breast, to form nourishment there in the secretion of milk, and hence this discharge ought no longer to take place periodically until the child is weaned: when it does take place, it is proof that the intention of nature is no longer to form milk, but to resume its determination to its original channel, for further supply to gestation or periodical discharge: hence it is impossible for any female constitution to have strength sufficient to supply blood to the womb for the purposes of gestation, and blood to the vessels of the breast for secretion of the milk. To what conclusion does it bring us, therefore?

To this,

That the blood which is determined to the breast is impure, being out of the course of nature; and the breast, instead of being the vehicle of nourishing milk, becomes an exit for the humours of the female constitution. How do we know this? From experience, that any artificial discharge from the body becomes the reservoir of all the morbid determination in the body, as the veins in piles, the matter from setons, the concretions in the joints from gout. The best proof of this assertion are the children themselves; they generally become peevish, sickly, and reduced.

In addition, I must now disprove the assertion of mothers, that the breast, in event of difficult dentition exciting fever, will be such a comfort to a child, that it may be the means of saving its life. I beg to deny it as a general rule, where children take the breast when in fever. The infant's irritability is such, that it will scarcely touch the breast, but hastily withdraws its little parched lips: in one continued restlessness, an infant moves from the arms to the lap, and turns, and coils up its little burning limbs alternately and unceasingly. Indeed, toast and water is invariably preferred; but the approximation of the child's body to that of its mother's so much increases the feverish heat, that the infant turns hastily away; and not only in fever does the child refuse the breast, but on every occasion when pain occurs: but more especially on the excitement in the mouth,

when the teeth are coming through, such is the fear of a child lest any thing touch the distended gum, that the nipple is also dreaded, and liquid food is preferred. Where disease and pain are not present, I admit most fully, that a child enjoys the breast, and as luxuriously feasts and plays with it as the most consummate epicure over the greatest relish his appetite could desire; and I join in the feeling with mothers, that it affords exquisite delight to witness our dear infants thus happily employed; and it is to be lamented that this envious occupation cannot be prolonged beyond the ninth month with impunity, as far as respects the health of mother and child: and I grant, moreover, that the irritability of a child is much lessened by the gratification in the hope of any pleasure, and the breast being held out as a pleasure to be anticipated, will allay it; but where that pleasure is not known, the mind is content, which is therefore not lessening the strength of opinion, with weaning at the ninth month; on the other hand, as with some children, the constant desire for the breast, which is neither expedient nor proper always to gratify, is a source of irritability, and induces to peevishness as a result, an aggravation of difficult dentition. So much for the infant: now let us revert to the mother. I am one of those who willingly take the reproach of being after the old school, in giving much to the operation of Nature. Indeed, I take her for my guide. I watch her movements; go with her, and when I find her stumbling, then I hasten to her assistance; but she does all things well. It is our imprudences which turn her from her course, and put her wrong. If by our errors we have put her out of her way, we must retrace our steps to find the track she was in: having accomplished this object, we shall discover the road she was going, from which we must be careful not again to deviate: like the sagacious horse, who knows well his master's gate, and will never pass it unless by compulsion. So does Nature, from habit, know all her operations, and will not fail to perform them; but by the arbitrary follies of man she is turned from the display of her sublime and beautiful movements. Thus we wit-

ness the whole animal and vegetable creation moving in one harmonious circle of operation, and an admonishing lesson to the created of intellect and reason.

We are led by nature, therefore, to show the period of weaning is at the ninth month, for the sake of infancy, and no less for the preservation and health of the mother.

We must next consider the effects on the mother's constitution, when the periodical discharge recurs. With the secretion in the breasts, and this determination to the womb simultaneously, the draws on, or let me rather say, the expenditure from, the constitution is such, that no wonder nature has not means to meet the supply, and the state becomes bankrupt,—a bankruptcy too, which too often is never superseded, but the insolvent is imprisoned on a bed of sickness, and gradually pining away, dissolution is the only insolvent act of liberation. But nature intended a more prudent, a more thrifty mother, when she appointed her to the important office of a wife, and she intended that she should multiply: and it is not a rare occurrence to find some mothers who have had twelve children, others who have had sixteen. In the genealogical history of Tuscany, written by Ginarini, mention is made of a nobleman of Sienna named Pishi, who of three wives had 150 children; and that being sent ambassador to the pope and the emperor, he had 48 of his sons in his retinue. In a monument in the church-yard of St. Innocent at Paris, erected to a woman at 88 years of age, it is recorded, that she might have seen 268 children directly issued from her. This exceeds what Hakewell relates of Mrs. Honeywood, a gentlewoman of Kent, born in the year 1527, and married at 16 to her only husband R. Honeywood of Charing, Esq. and died in her 93d year. She had 16 children of her own body, of which three died young, and a fourth had no issue: yet her grandchildren, in the second generation, amounted to 114, in the third to 228, though in the fourth they fell to nine*; the whole number she might have seen in her lifetime being 367; $16+14+228+9=367$†. I will

* This is half a regiment on the present establishment, June 1828.
† Encycl. Brit.

venture to say, none of these mothers nursed their children beyond the twelfth month. Indeed, the mother who thoughtlessly ventures to be guilty of such an adventure, will seldom see her fourth child ere her own constitution sinks. But ladies who nurse to so late a period in India, after their fourth or fifth child, employ native nurses, under all the disadvantages I have shown in the first part of this work, as most ladies I have seen experience the debility and effects of a broken constitution, after the nursing of that number of infants to this improper length of period. Now if parents limit the period to the ninth month, if it is the will of the Creator, they will be as fortunate as Mrs. Honeywood, with this difference, that they may be able to nurse every child; and instead of the nursing proving injurious, it will ordinarily promote, as well as preserve, the health of the parent's constitution.

FINIS.

ERRATA.

Page	17	line	6 supply a comma between "beef" and "curry."
,,	25	,,	15 *for* "for" *read* "four."
,,	36	,,	20 *for* "peculiary" *read* "peculiarly."
,,	58	,,	12 *for* "two" *read* "too."
,,	104	,,	17 *for* "Mr. Booth" *read* "Mr. North."
,,	105	,,	3 The asterisk should be placed over "ganglionic" instead of "resemble."
,,	150	,,	4 from the bottom, the asterisk should be placed over "swelled," instead of "yellowish."
,,	154	,,	17 *for* "assisted" *read* "arrested."
,,	166	,,	Beginning of Sect. XXII. *for* "I have they" *read* "I have no doubt they"
,,	188	,,	25 *for* "declaed" *read* "declared."
,,	230	,,	8 *for* "Corroborants" *read* "Tonics."
,,	232	,,	18 *for* "No. 21 of Purgatives" *read* "No. 2 of Purgatives."
,,	234	,,	19 *for* "No. 5, Sect. IV." *read* "No. V. Sect. IV."
,,	239	,,	28 *for* "conjestive" *read* "congestive."
,,	263	,,	8 *for* "stimulates" *read* "resembles."
,,	273	Note,	*for* "cranium" *read* "cranial."
,,	294	,,	5 from the bottom, *for* "stuped" *read* "bathed."
,,	317	,,	3 from the bottom, *for* "Corroborants" *read* "Tonics."
,,	325	,,	5 *for* "Corroborants" *read* "Tonics."
,,	328	,,	20 *for* "brain" *read* "breast."
,,	334	,,	7 from the bottom, after "shoulders," *add* "as well as a blister."
,,	342	,,	4 *for* "break" *read* "breathe."
,,	388	,,	2 from the bottom, *for* "eeth" *read* "teeth."
,,	421	,,	1 *dele* "July,"
,,	454	,,	13 *for* "quinqeetion" *read* "quinquertia."