

A dissertation upon the cholera infantum : to which are added, rules and regulations, as preventive means of the autumnal diseases of children : which gained the Boylstonian prize, for the year 1803 / by James Mann.

Contributors

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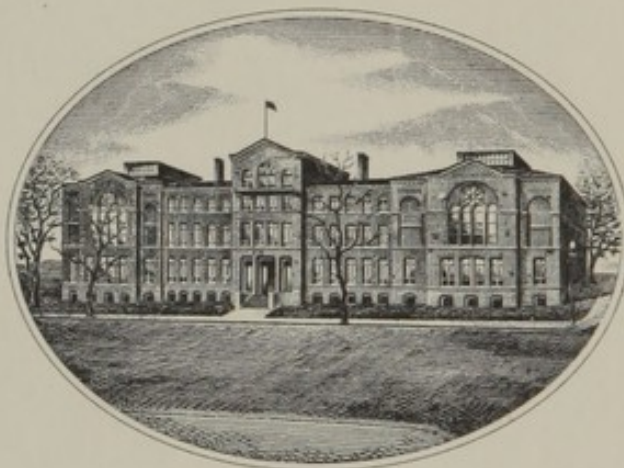
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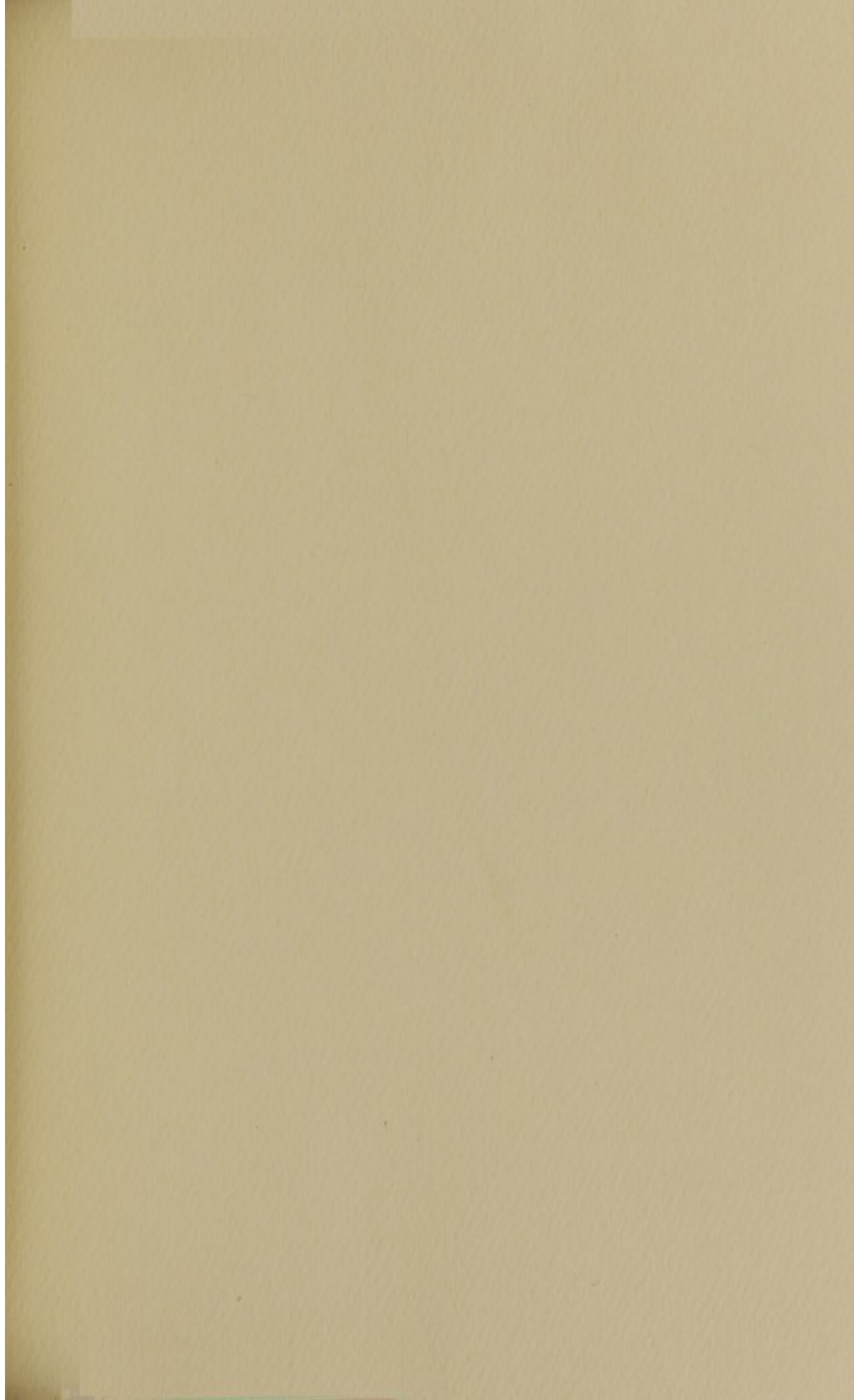


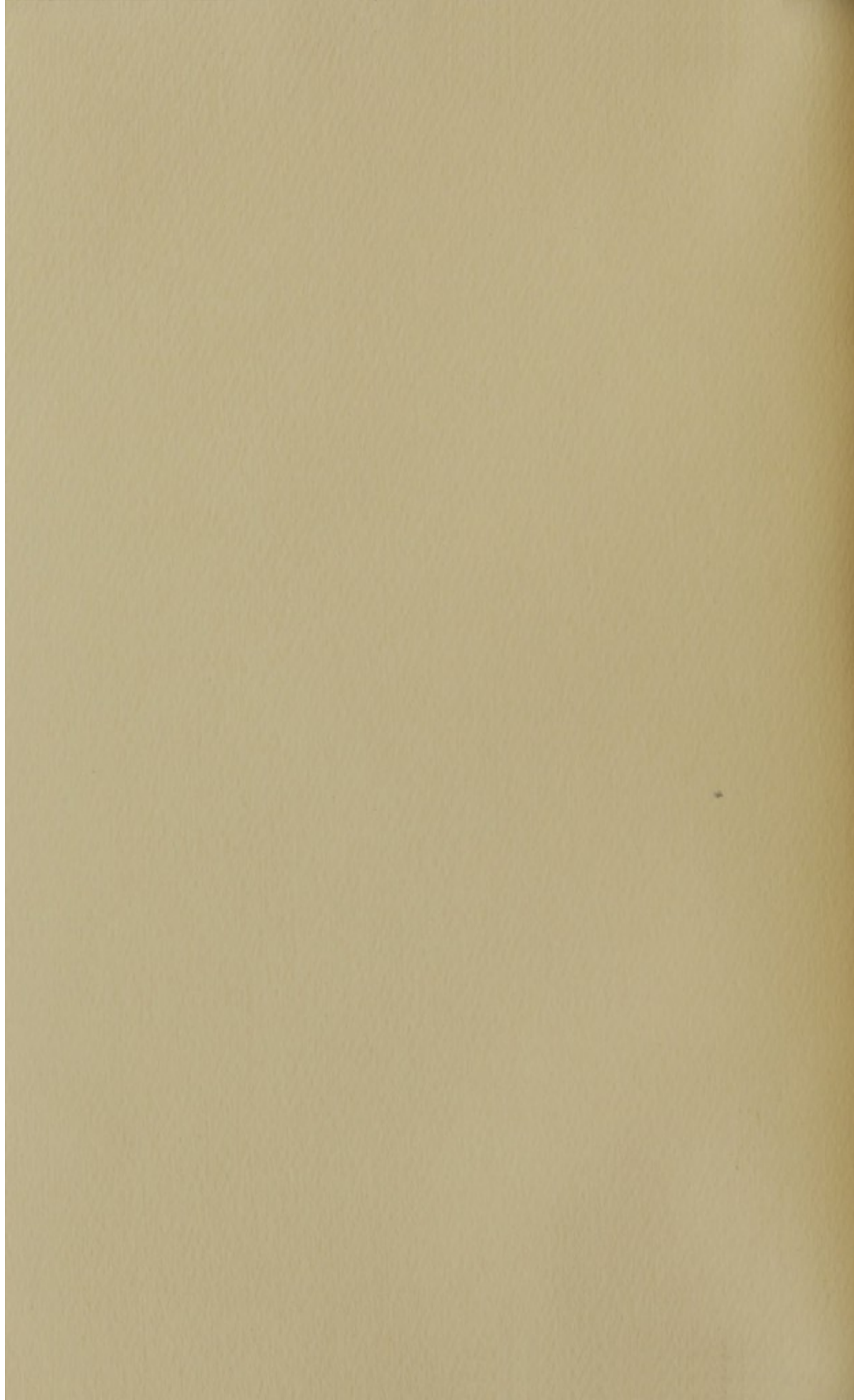
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A
DISSERTATION

UPON THE
CHOLERA INFANTUM;

TO WHICH ARE ADDED,

Rules and Regulations,

AS PREVENTIVE MEANS OF THE

Autumnal Diseases of Children ;

WHICH GAINED THE

BOYLSTONIAN PRIZE,

FOR THE YEAR 1803.

BY JAMES MANN, A.M.
FELLOW OF THE MASSACHUSETTS MEDICAL SOCIETY.

BOSTON :
PRINTED FOR YOUNG & MINNS, PRINTERS TO THE STATE.

1804.

W. B. E. L. A. T. O. N.

CHOLERA INFANTUM
MEDICAL

AND THE

AS PREVENTIVE MEANS OF THE

CHOLERA INFANTUM

AND THE

CHOLERA INFANTUM

AND THE YEAR 1817

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TO
WARD NICHOLAS BOYLSTON, *Esq.*

A GENTLEMAN PRE-EMINENTLY BENEVOLENT,

AS EVINCED

BY A LIBERAL ENDOWMENT

FOR THE PROMOTION OF

MEDICAL SCIENCE,

AND THE

Philosophical Branches of Literature,

CONNECTED WITH IT,

This Dissertation,

UPON THE

AUTUMNAL DISEASES OF INFANTS,

BEING THE *FIRST FRUITS* OF HIS

Philanthropic Institution,

IS,

ON ACCOUNT OF HIS MANY VIRTUES,

MOST HUMBLY DEDICATED,

BY HIS VERY OBEDIENT SERVANT,

JAMES MANN.

THOMAS BUCHANAN

A. C. BUCHANAN

A. C. BUCHANAN

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A. C. BUCHANAN

PREFACE.

AMONG the many humane associations for the improvement of the arts, and the promotion of science, it is with pleasure we behold, that of medicine is not destitute of gentlemen, who, by their talents and patronage, are able and willing to afford it a generous support.

It is, in some measure, owing to the very respectable members, who were instrumental of establishing, at first, the MASSACHUSETTS MEDICAL SOCIETY, that we observe the majesty of medical philosophy triumphing over illiberal empiricism, and imposing quackery sinking into deserved disreputation.

Although *nostrums*, under specious appellations, and unmerited encomiums, are still daily published, and sold to the misinformed invalid, to benefit no one except the avaricious patentee, or interested venders themselves ; yet it is with pride, we can assert, that in no portion of the world are they less sought after, than in the New-England States.

The time is rapidly approaching, we contemplate, when the good sense of our well-informed countrymen will deride the name of a medicine unwarranted by established practice, and whose beneficial effects are unknown, except upon the venders' bills ; while they will spurn from them, the contemptible authors of them, who, for the sake of sordid lucre, do not blush to sport with the healths and lives of their fellow-citizens. The philosopher in medicine, as well as the other branches of science, which immediately have respect to health, conceals nothing from the public eye, which he supposes may be of general usefulness.

It is only a few years, since the science of medicine has become a branch of academic education in New-England. It is owing principally to the benevolent exertions of a few, with many sacrifices of others, that HARVARD UNIVERSITY is, at this time,

so abundantly furnished with able instructors in medicine, and the various branches of science, connected more immediately with the healing art.

We still behold the work of benevolence progressing. MASSACHUSETTS is out-stripped neither by her sister States, nor the eastern continent, by deeds of philanthropy. The benevolent institution, which caused this production to be ushered into existence, was founded by WARD NICHOLAS BOYLSTON, Esq. in the year 1803. That PHILANTHROPIST has provided a fund, the proceeds of which are to be annually appropriated to the beneficent purpose of encouraging the science of medicine, and of improving the art of health. At his instance the following prize questions were published, by the Committee appointed by the President and Fellows of Harvard College.

PRIZE QUESTIONS.

“ With the beneficent and laudable view of improving the art
 “ of medicine, and to excite practitioners to bring those talents
 “ to light, which might otherwise be useless to the community,
 “ WARD NICHOLAS BOYLSTON, Esq. hath, by an instrument under his hand and seal, given to the President and Fellows of
 “ Harvard College, in Cambridge, bearing date, January 20,
 “ 1803, empowered and enabled that Corporation to appoint annually, a Committee, skilled in subjects connected with medical science, to propose annually sundry questions upon such
 “ medical, anatomical, physiological or chemical subjects, as
 “ they may deem most useful ; and the several authors of the
 “ best dissertations (in the judgment of a majority of said Committee) upon each of said subjects, which shall be transmitted
 “ or delivered to them on or before the 20th November next,
 “ after public notice given of said questions, are entitled to receive of this Committee a prize medal, (or the amount in money, at their option) of such value as to said Committee shall
 “ seem proper ; provided the value of all the medals distributed,
 “ and money thus paid, in any one year, shall not exceed one
 “ hundred dollars ; and the said Corporation, having appointed
 “ Drs. Holyoke, Lloyd, Tufts, Danforth, sen. Rand, sen. Fisher,
 “ Warren, sen. Waterhouse, and Dexter, to be a Committee to
 “ propound the questions above mentioned, and to carry into

“effect Mr. BOYLSTON’s benevolent purpose, they do hereby
 “propose the following questions to all who cultivate medicine,
 “or the sciences connected with it, and invite their attention to
 “a discussion of the several subjects here laid before them.

“1. How does air act upon or influence animal bodies, in
 “originating and continuing respiration, maintaining organic
 “motion, and preserving the exercise of the vital functions?

“2. What are the causes, the nature and cure of the autumnal
 “diseases of infants, as prevailing in the New-England States?

“3. Do any anatomical facts or discoveries explain the na-
 “ture of tetanus or locked jaw? When the spasm arises from an
 “injured nerve, in what way is the nerve affected? Or does
 “tetanus depend rather on the particular mode in which the
 “wound is inflicted? And, if so, what is that state of the system
 “most favourable to the production of tetanus?

“Each thesis or dissertation on either of these subjects must
 “be transmitted to Dr. E. A. Holyoke, of Salem, on or before
 “the 20th of November, 1803, and with a sealed ticket, or
 “packet, with some device or sentence on the outside, and
 “within the writer’s name and designation; the same device or
 “sentence must be put on the dissertation it accompanies, and
 “no dissertation can be received which has the writer’s name
 “affixed.

“And this Committee do engage to deliver, agreeably to said
 “instrument, a gold medal, of the value of thirty dollars, or
 “its value in money, at the option of the successful candidate.

“All unsuccessful dissertations shall be returned, if desired,
 “with the sealed packet or ticket unopened.

“Signed by order of the Committee,

“E. A. HOLYOKE, *Chairman.*”

Boston, August 19, 1803.

The author of this dissertation received the following letter
 from the above named Committee.

Salem, Feb. 23, 1804.

SIR,

THE Committee appointed by the Corporation of HARVARD UNIVERSITY, at the instance of WARD NICHOLAS BOYLSTON, Esq. to determine the merits of the several dissertations, they might receive upon the questions they proposed to the public; did at their meeting the 28th December last, at Boston, determine, "That the writer of a dissertation designated by the motto, *Exitus in dubio*, should be entitled to a premium of 30 dollars, or a gold medal, at his option."

The ticket accompanying this dissertation was then broken open, and found to contain the signature of James Mann, of Wrentham.—You are therefore, Sir, entitled to receive the above mentioned premium, and the Committee would wish you to make them acquainted with your choice.

With my congratulations for the success of your performance, I subscribe myself yours, &c.

E. A. HOLYOKE,

Per order of Committee.

Doct^r JAMES MANN, Wrentham.

A DISSERTATION

UPON THE

CAUSES, THE NATURE, AND CURE OF AUTUMNAL DISEASES OF INFANTS, AS PREVAILING IN THE NEW-ENGLAND STATES.

FOR the want of a more appropriate name, we shall, in this dissertation, designate the autumnal vomiting and purging of children, by the general denomination, EVACUATIONES ALVINÆ AUTUMNIALES INFANTUM.

In connexion with these evacuations of vomiting and purging, we mean to include all those complaints of the alimentary canal, with which children are attacked, principally, in the months of July, August, and September. The whole assemblage of these disorders will be considered as one and the same disease, as having their origin from the same common causes, and as being removed by the same general remedies.

Physicians have viewed these complaints, as a regular autumnal epidemic; and have believed, as the disease appears about that season when autumnal fevers prevail among adults, that it has one and the same source with those fevers.

These *alvine evacuations* have generally been denominated, by NOSOLOGISTS, either conformably to what has been supposed the cause of them, or

agreeably to the form they have assumed : and as it is has been apprehended, that they have their origin most generally from a redundance of bile in the alimentary canal, the disease has obtained, for its generic name, *Cholera*, from $\chiολ\eta$ *bilis*, bile. When these evacuations assume a form, in which there is an inverted motion of the whole intestinal canal from the mouth to the anus, accompanied with an inverted motion of all the lymphatics which empty into it, the disease is called *Passio Iliaca*, from a supposition that the disease has its seat in the *Ilium*. When these evacuations take upon themselves a form in which aliments are scarcely changed by the digestive powers, and purgings supervene immediately upon nutriment being received into the stomach, the disease is denominated, *Lienteria*, from $\lambdaειος$ slippery, and $\epsilonντερον$ intestine. When the purgings assume an appearance, as if raw flesh had been washed in water, these evacuations are named *Hepatirrhæa*, from $\etaπαρ$ the liver, and $\rhoηω$ to flow, upon a supposition, that they flowed from the liver. When these evacuations are white, from a belief, that chyle is evacuated, the disease has obtained the name, *Cæliaca*, from $κοινα$ stomach, where the chyle is formed, as has been supposed. When these purgings are wholly or mostly blood, black, or dark, the disease has been named $Μελαινα$ black, this state has been thought to originate from a vitiated and malignant bile. When these evacuations are accompanied with gripes and tenesmus, the disease is denominated *dysenteria*, from $\lambdaυς$ bad, and $\epsilonντερον$ intestine. These evacuations, in their most simple form, are designated *diarrhæa*, from $δια$, and $\rhoηω$, to run through. Many of these names being too indeterminate, and not accurately expressive of the nature of the diseases, which they were intended to represent, are now out of use;

while others of them which are still employed, for the same reason may, with much propriety, be laid aside.

Have we not been too long in habits of adopting, not only the language, but the opinions of our predecessors connected with it? and have we not implicitly received their erroneous doctrines, as real scientifics, without exercising our own judgments? For this reason, the theory and practice of medicine have been, and still continue to be, encumbered in many instances with an incongruous jargon, and an unmeaning diction.

Infants, under the age of two years, are more subject to these diseases of the alimentary canal, than those more advanced in years. Children, nevertheless, above two, and even up to six years of age, and older, are not exempted.*

This disease is more frequent among children of large towns, than country villages; more frequent in the vicinity of large rivers, lakes, and standing waters, than upon elevated and dry situations. It makes its first appearance about the commencement of the greatest heat of summer, and it seems to prevail when the cool evenings and mornings set in, the meridian sun of the same days being extremely hot; and it does not abate, until the temperature of the air, throughout the day, is more regular, and its variableness less; from the last circumstance, it is inferred, that sudden changes have considerable influence in producing this disease.

* In the above treatise, we have confined ourselves to the disease, as it appears among children. Although they, on account of a greater irritability of their systems, are more liable to these disorders of the stomach and bowels than adults, who, from a firm and rigid state of their fibres, are constitutionally better able to resist or counteract the causes which produce them; yet we are acquainted with no law of nature, which operates to cause a disease upon infants, that will not, under some circumstances, create a similar disease upon adults.

This disease commences its attack, generally at night after a very hot day; the human body being more disposed during sleep, to diseases, from the action of unnatural stimuli, in consequence of an accumulation of the sensorial power, at that time; as explained, by Dr. Darwin, in sect xviii. 15. on sleep.*

This disease is almost as multiform, as there are persons seized with it. It commences with a simple *diarrhæa*, sometimes unaccompanied with fever. At times, it is ushered in by violent vomiting and purging, with much heat, and arterial action. A vomiting sometimes commences the attack, and continues without a purging; while, in some cases, a purging begins, and continues without a vomiting. The appearances of the evacuations from the intestines are various; the dejections are, either light coloured, brown, green, or yellow, or, a mixture of these colours; they are sometimes copious, and watery; sometimes small, white, and slimy, often streaked with blood; they are often at the first onset large, then become small, accompanied with tenesmus, and soreness of the *sphincter ani*, and lower portion of the *rectum*. At times they are fetid, sometimes destitute of offensive smell, and often very sour. Sometimes the evacuations by stool, resemble water in which fresh beef has been soaked. This state of the bowels indicates much danger. The discharges from the stomach are sometimes either green, or yellow, mixed with its contents; often limpid, and similar to water, even where none of that fluid has been received into it. In the most violent form of the disease, feculent matter is sometimes vomited. The materials cast off from the stomach are sometimes bitter, oftener sour; children, who are capable of giving notice, will often communicate to the bye-standers the

* Zoonomia, Vol. 1. New-York Edition.

disagreeable sensation, with which their œsophagus, fauces, and teeth are affected, by the acids disgorged by vomiting. The pulse is often strong at the commencement of the disease, but soon becomes weak and quick; in other cases weak and fluttering from its first attack. When there is a fever, it remits generally in the morning; and evinces evening exacerbations. Considerable thirst accompanies some forms of the disease; while in its most violent state, even where a coldness and sinking has supervened, the thirst is not to be satiated. The pain is generally proportioned to the rapidity of the attack, and its violence, and consequently its danger, is proportioned to a predisposition existing in consequence of the excessive excitement of heat. This disease, in its mild form, continues often many weeks. In its most violent form, it hurries off the patient in twenty-four hours. A swelling of the abdomen takes place, sometimes, in the last stage of the disease. When it has continued a great length of time, the approach of its fatal termination is slow, but marked with symptoms distressing, and extremely affecting, as denoting a certain dissolution. A sore mouth, and fauces, with aphthous incrustations, an excoriated anus, a singultus, cold extremities, and convulsions are the sure harbingers of death.

Upon dissecting some, who have died under a violent form of this disease, signs of excessive excitement within the alimentary canal, were observed. A child, eighteen months old, was seized with violent vomiting, and purging, accompanied, the first twelve hours of the attack, with strong action of the arterial system, and much heat; the pulse then became small and irregular; the means, usually recommended, were here employed, without any salutary effect; the patient died after about thirty hours indisposition. The parent of the

child, supposing the disease to originate from worms, (they being the most general cause, to which this disease is imputed, in this vicinity) requested, for his own satisfaction, that the abdomen of the infant might be opened, and the alimentary canal examined. Not a worm was found within it. The contents of it had been so thoroughly evacuated by the disease, that it did not contain one ounce of any material whatever.

A child, thirty months of age, was attacked with vomiting and purging to excess; after three days, it sunk under the weight of disease. The stomach and intestines were much inflamed; upon inspection it appeared that livid spots, and incipient mortification had supervened. The contents of the alimentary canal had been completely discharged. From the whole chain of it, not one ounce of any material could have been collected. A black matter adhered to parts of the internal lining of the stomach. The evacuations, in the above cases, did not discover any tincture of bile.

CAUSES.

THE causes, which have been assigned by physicians as productive of this disease, shall severally be considered.

First. These alvine evacuations are imputed to worms. When worms are lodged within the intestinal canal, at the period of attack from this disease, and which is not unfrequently the case, they are generally discharged in the course of evacuations; from this circumstance, it has been suspected, that the disease is occasioned by worms. A very convincing evidence, that the disease does not originate from worms, and which, from experience, we are authorized to offer, is, that it never

does abate, in consequence of their evacuation. In one instance, more than thirty large worms of the species *Lumbrici* were ejected early in the disease, without any abatement ; its termination was notwithstanding fatal. Another circumstance, which presents itself, as a proof that these evacuations do not originate from worms, is, that they in their worst form come upon infants, previous to that age, wherein worms are known to exist.

Second. Dentition has been supposed to occasion this disease. It will not be disputed, that the local inflammation, caused by the cutting of teeth, will by association increase the action of the whole arterial system, and may, in this manner, be an exciting cause of the disease ; but more especially aggravate every symptom of it, when formed. We do not, however, admit, that it is the efficient cause of the disease ; because these evacuations occur at one season of the year only ; whereas dentition occurs at every season. This disease attacks children, furthermore, before and after the period of teething, as well as at the time.

Third. The fruits of summer and autumn have been said to be productive of this disease. When the fruits of these seasons are gormandized, without dispute they prove an exciting cause of the disease ; acid, unripe fruits co-operate with other causes to occasion it, and increase it ; yet we doubt whether they are the principal cause of the disease. Children, who are too young to be in the use of them, as well as those who have not during the season eat of them, are equally liable to an attack, as those who have been in a free use of them. A moderate use of ripe subacid fruits, during the season of these disorders, has been recommended by some physicians of respectability, as a preventive to these autumnal complaints, by

removing a costive state of the bowels, which is generally a precursor to the disease.

Fourth. Among the various causes, assigned by authors, one, which is still supposed as very operative in producing these evacuations of children, and is thought to be the *sine quâ non* of the disease, is the bile ; either the excretion of it, in unusual quantity, or a morbid state of it ; from which circumstance, the name *Cholera* has been given to the disease, and by this appellation it is most generally known.

But, before offering any objections to the doctrine, that the bile is the cause of this disease, we esteem it not improper to give a concise view of the structure of the liver, and the gall bladder, and their office, with the use of its secreted fluid, the bile.

The liver, situated immediately under the *diaphragm*, partly in the right *hypochondrium*, and partly in the *epigastric* region, between the *appendix ensiformis*, and *spina dorsæ*, and terminating commonly in the left *hypochondrium*, occupies the principal part of these regions. Its figure is irregular, convex on the upper, and anterior, and unequally concave on the lower and posterior side ; its edge is very thick on the right and back part, and the left and inferior portions are terminated in an edge. The liver may be divided into two lobes, one of which is termed the great or right lobe, the other, the small or left. It is secured above, at the back and sides, by a number of ligaments, which keep it firm in its situation. This collection of glands, so called by some anatomists, is composed of several kinds of vessels ; the ramifications of which, being interwoven, form a vast number of soft and small corpuscles ; these are supposed to be the organs designed to separate from the mass of blood, a particular fluid, termed the bile. The liver is supplied

with blood principally by a vein called *vena porta*; the branches of which are almost innumerable, and their extremities end in the abovementioned corpuscles. It is in these corpuscles, that the bile is secreted, as has been already observed, and is immediately collected in the extremities of another kind of vessels, which unite in one common trunk, called *ductus hepaticus*. The *ductus hepaticus* very soon joins another canal, called *ductus cysticus*, leading from the *vesicula fellea*. These united, form a common trunk, called *ductus choledochus*; because it conveys the bile. This duct having reached the *duodenum*, insinuates itself through the coats of that intestine into its cavity. The *vesicula fellea*, or gall bladder, a small pear-like bag, lies in a depression, on the concave side of the liver. This cyst receives only a part of the gall, which is secreted by the liver, a part being continually conveyed through the *ductus hepaticus*, into the *duodenum*; wherefore it seems as if this cyst was designed as a reservoir of bile, to be employed on particular emergencies, more especially, as its bile flows from it, in consequence of compression, more than from any other cause. And, as this compression naturally accompanies a distension of the stomach, with aliment, it is presumed, that a larger quantity of that fluid is discharged at that time, in consequence, to counteract the greater tendency to acetous, and putrefactive fermentation, which exists under such states.

What are the circumstances favourable to acetous and putrid fermentation? They are a combination of organized animal or vegetable substances with air, moisture and heat. These are, with little interruption, constantly present in the alimentary canal. What is that agent, which, in a sound state of the body, prevents, or counteracts this acetous, and putrefactive process, except it is the gastric

juice, and the bile? It is presumed, it will not at this day be contended, that digestion is merely a fermentative, or putrefactive process.

From the soft and pulpy substance of the liver; from the slowness with which the bile is secreted; from the blood, supplied for this purpose, wholly by a vein, as it is fully demonstrated, that no part of it is secreted from the arterial blood; from the numberless points or glands from which this fluid is separated, have we not much reason to admire, that this organ does not more frequently become torpid, and incapable of performing its office? especially, when we observe that other organs, less complicated, are easily deranged and put out of order. The bile is of a full yellow colour, with a tincture of green. From the result of Dr. Saunders' experiments,* it contains a resinous bitter, and a portion of soda (marine alkali); on which account, it is suited to correct acids, and check putrid fermentation.

These things being premised, it will not be objected, that there is often a redundancy of bile in the alimentary canal, more especially, after its suppression, either from an obstruction of the hepatic ducts, or, from a torpor of that *viscus*.

That this superabundance may occasion a *diarrhæa* we grant; but, we suppose at the same time, it may often be salutary. Of this kind, are those critical *diarrhæas*, so called by systematic writers, which frequently accompany the solution of fevers.

The presence of the bile, in the stools of infants when disordered, even nurses consider as a favourable circumstance, and from its appearance, predict a return of their health.

That children often vomit and purge bile, with the contents of the alimentary canal, will not be contradicted; but, is it conclusive, that the bile so

* Saunders on the Liver.

evacuated, is the cause of the commotion which existed in the stomach and bowels? Is it not more reasonable to infer, that such bilious discharges are effects of the disorder; that the bile had no existence in the alimentary canal, previous to the attack; and that the very appearance of it, in large quantities, is a criterion, by which to prognosticate a favourable termination of the existing derangement?

It is well known to physicians, that the bile is the natural stimulus of the intestines; it may be considered as a cathartic prepared by nature; for when destitute of it, the canal cannot duly execute its offices; and when the other properties of that fluid are attended to, and carefully considered, it will be found to be of the utmost importance in the great laboratory of the animal system; *always salutary, never productive* of those baneful effects, which have been too often ascribed to it. Whenever the bile superabounds, what other effect than that of a mild purge is ever observed from it? When it is secreted in usual quantity, it no more than excites the intestines into healthy peristaltic motions, whereby, their excretions are promoted, and their fecal contents expelled. But in cases where there is deficiency of this natural stimulus and corrector, the whole alimentary canal becomes disordered. Either a torpor or costiveness follows, as in *jaundice*; or a purging supervenes, accompanied with pain, perhaps inflammation, and tenesmus, more or less violent, as the other causes of heat and climate co-operate to produce these effects. The whole disordered state arises from an unnatural stimulation of an accumulated acid, which exists in consequence of a defect of their corrector, and neutralizer.

If animal and vegetable substances are disposed to undergo changes in the stomach, similar to those without, it is most evident that acetous, or

putrid fermentation, would there take place continually, if they were not restrained by a commixture of some natural secreted fluids. In this employment the bile, in all probability, takes an active part. That acetous fermentation does often exist, in the alimentary canal, is evident from *cardialgia*, and acid eructations, which accompany those diseases, where there is a known deficiency of bile, as in *jaundice*, and *dyspepsia*; and no sooner does the bile exhibit itself, than these acidities disappear, with those diseases, of which they are a part. It is from this circumstance, as well as the salutary effects of correctors of acids, in all these disorders, we infer that the bile possesses the properties of alkalies, and the power to neutralize those acids, which are continually generating in the stomach, and which increase and abound when there is a want of a due quantity of this salutary fluid.

If more evidence is wanting, that the bile possesses the property of alkalies, than what is derived from its use in the alimentary canal, we have the experiments of Dr. SAUNDERS upon that fluid, which are to the purpose; he has clearly demonstrated, that a part of the bile is an alkali, and therefore is fitted to correct or neutralize acedcent matters generated in the stomach; and in this way it is instrumental, he says, in preventing their mischievous effects.

We are continually reminded, by medical books and medical gentlemen, of the vitiated state of the bile, in fevers and other diseases. Its *acrid*, *acrimonious*, and *putrescent* properties are daily founded in our ears. What language is more familiar to us, than *Cholera morbus*, *bilious fever*, *bilious dysentery*, and *bilious diarrhæa*, upon a supposition, that in these diseases an excess of bile, or a *morbid* state of it, are the occasion of the principal part of the disturbance. Yet have we, by any experiments, been taught, that large quantities, or a morbid quality

of this fluid, do ever create the above states of disease?

The observations of Dr. PHYSIC demonstrate the contrary. He dissected the bodies of a number, who died with the yellow fever, and proved the matter of black vomit, which at that time, and since, was supposed to be a secreted fluid of the liver, to be essentially different from the bile. From which circumstance, we contemplate, that yellow fever, with other diseases, will not in future be supposed to have their origin from a vitiated state of bile, nor from a redundance of that fluid.*

If in a most fatal disease, and one which has been supposed to have its source from the bile, it is demonstrated, that bile was not found in the alimentary canal of those who died of it; the inference which may be drawn is, that the supposition of other diseases having their origin from a redundance, or vitiated state of bile, may likewise be without foundation.

Furthermore, DOCT. SAUNDERS refutes the common and prevailing opinion, that bile is a septic. He demonstrates "that it is less disposed to putrefy, than other animal substances; and that it even preserves, in a sweet state, animal substances, which, when exposed to similar circumstances of fluidity, and heat, without the admixture of bile, would, in a shorter time, have assumed the character of putrefaction." From the result of his experiments, DOCT. SAUNDERS concludes, that the bile possesses a two-fold property; that by means of its alkali, it is a correcter of acidities, and of its resinous bitter, a restrainer of fermentation, and a resister of putrefaction.†

If the sentiments of another celebrated writer, that these disorders of infants are generally owing, not to

* Vide DOCT. PHYSIC's Observations, Med. Rep. Vol 5, page 129.

† SAUNDERS on the Liver.

bile in their alimentary canals, will have weight, we will adduce those of DOCT. DARWIN. He supposes that *Cholera* frequently arises from some putrid food, and adds, "that during the inverted motion of the stomach, the duodenum has its peristaltic motion inverted at the same time, by its association with the stomach, and the bile, and pancreatic juice, which it contains, are, by the inverted motion, brought into the stomach, and discharged with its contents; while a greater quantity of bile, and pancreatic juice, is poured into the intestines, as the glands which secrete them are, by their associations with the motion of the intestines, excited into stronger action, than usual. The lymphatic system, that open their mouths into the intestines, suffer a similar inversion of their motion, and contribute to increase the quantity of evacuation, and to stimulate the bowels into increased action."*

The whole phenomena of *diarrhæa* and *cholera*, as represented by Dr. DARWIN, are exhibited upon the principle, that the bile, in the evacuations, is not the cause, but merely the effect of the disease.

How opposed are the above sentiments to the generally received opinion, that the bile is the principal agent in producing most of the diseases of hot seasons! How long must we be obliged to subscribe to the false hypotheses, which, in times past, have intruded themselves upon us? Will doctrines, founded upon them, ever yield to the convincing evidence of experiments and facts? Mankind are so strongly riveted to prepossessed opinions, that it is with reluctance they give them up, and learn those that are new. They are too proud to acknowledge, that they knew too little, and too indolent to seek the means, by which further acquisitions may be obtained. Even Doctor SAUNDERS himself seems to have been so much prejudiced in

* Darwin's Zoonomia.

the prevailing theory, that he, notwithstanding his well executed experiments, has in his practice adopted its language and doctrines.

In this place, let me ask those, who imagine that the bile is ever hurtful in its progress through the alimentary canal, at what time it is converted from a salutary, to an offensive fluid? Does it assume this last condition, in consequence of a deranged state of the liver? or does the change take place after its lodgment in the gall-bladder, or after it has passed into the duodenum? What are the causes which subject it to this change, if it takes place; and what are its powers, or chymical properties, after it has put on this vitiated state?

In answer, it may be again alleged, as it has already been, that an unusual quantity of bile, and an acrid state of it may be produced by "morbid effluvia first lodged in the saliva; thence conveyed and lodged in the stomach and intestines; here, either perverting, or totally destroying, the digestive powers of the viscera; thereby a putrid, or highly corrosive mass is generated, instead of a mild and bland substance to give nourishment to animal life." Thus far we suppose is highly probable, and this is sufficient to account for many forms of disease, occasioned by the operation of unnatural stimuli upon the stomach, and within the intestinal canal. But, that "the mesenteric veins should become loaded with a putrid mass of indigested substances, which are conveyed through the *venæ portorum*, into the liver, whereby this important viscus becomes disordered; and the bile is thrown into the intestines, and up the stomach, in unusual quantities, and in an acrid state, there to disorganize,"* are not so easily demonstrated. For we have no evidence, that the absorbents of the intestines do ever take up fluids, except *such*, as are conge-

* Doctor Samuel Brown's inaugural dissertation.

nial to their forms, or their capacities, or their offices; if they are disposed to do this, from their situation, and their vicinity to fœcal and extraneous materials, we might reasonably conclude, that, at all times, they would become loaded with a putrid mass; and the system thereby would *always* be disordered. But while we reason from analogy, and compare the action of unknown poisons upon the body, with those, with which we are acquainted, we must conclude, that offending stimuli, whether received from without, or generated within, the alimentary canal, do directly act upon those organs, and there induce inflammation, and other violent commotions; and that, by association or sympathy, *the brain, the heart, the arterial system*, and all the parts connected with them, through the mediation of the nervous system, become affected. The above argument will be equally conclusive, whether the offending stimuli are received into the stomach, the lungs, or the pores of the cutis.

The last reasons, which we shall adduce for our belief, that the bile is not the cause of these alvine evacuations, are, that in the most obstinate cases of the disease, there is but seldom the appearance of bile in the discharges. The stools are destitute of that yellow colour, which always points out the presence of gall. And that upon dissecting some, who died of this disease, under its most violent form, bile was not found in the alimentary canal.

Fifth. Heat is among the supposed causes which produce this disease. As these alvine evacuations do not appear, until the heat of summer has reached its greatest height, we believe that the excitement of that element is one of the active causes of this disease; but in what manner this subtil agent operates to be a cause of it, is involved in much obscurity. However, we shall attempt an explanation. From a combination of heat, air and moisture, with

vegetable and animal substances, are probably extricated subtil materials, which, when received into the animal system, stimulate its organs into unnatural or diseased actions. These subtil materials as stimuli, independently of heat, undoubtedly have great influence upon the powers of life. But, excessive heat, in union with other active stimuli, will have still greater effect upon the powers of life. While heat in excess, separate from all other active stimulants, has great effect upon the excitability of living bodies.

Our subject leads us to inquire, why it is that infants are more afflicted with diseases of their stomachs and bowels than adults. Is an excess of heat more unfriendly to the powers of life, under the great excitability of infancy, than under a lesser excitability of old age? Is not the affirmative evident, from the following circumstances; that a greater proportion of infants are seized with diseases which prove mortal during the hot season, than of adults or aged persons; and that during the cold season, more of the aged than of infants expire in proportion to their numbers? From which we infer, that excessive heat, with other causes, will not impair the health of adults or the aged who possess lesser excitability; while the same heat, with the same causes, will create diseases upon infants, with greater excitability. Or, does the intestinal canal become habituated to offending stimuli of every kind, and thereby being accommodated to their action, no longer suffer from the same powers in adult age, which they had been accustomed to in infancy?

It is a law peculiar to animal life, that similar effects follow causes, in direct opposition to each other. While energetic life is supported by a due degree of stimulation, either a defect, or an over proportion of it, will create disease or occasion

death. Too great heat causes debility indirectly, while a deficiency of that power induces debility directly. This, with all other powers, always operates in proportion to excess or defect of stimulus.

During the action of extreme heat, we experience its effects upon our bodies; a general debility discovers itself by a lassitude, a languor, an *anorexia*, with other symptoms of animal as well as mental imbecility. With a disinclination to motion, every limb of the machine feels as if a dead weight was annexed to it. This inactivity or torpor is not confined to the locomotive organs; it is more than probable, that every part of the animal system is equally affected. With an *anorexia* and *dyspepsia*, the intestines are too slow in their action; the secretions are evidently deficient, and in a particular manner that of the liver, which, by association with the alimentary canal, is likewise become torpid, and neglects to perform its office. During this state, an accumulation of acids in the alimentary canal is noticed; their effects are at first perceived upon the very sensible and highly excitable coats of the stomach and intestines of infants, first by pain and gripes, then by vomiting and purging, heat and inflammation. The aliment in an half digested state, is ejected, the gastric juices having been too sparingly secreted in consequence of the general existing torpor. The whole of these conditions are more or less irregular, as the causes which produce them are more or less active.

Sixth. Acids are supposed to be a cause of these autumnal evacuations of infants. Acids, which are generated in the alimentary canal, are the product of a fermentative process. That they do exist within it as well as without, is fully evident to our senses. That they are the more immediate cause of the vomiting and purging of children, to which they are subjected during the autumnal months, is made highly probable, from the em-

ployment of such remedies as are neutralizers of acids, by means of which the disease is much alleviated, or does readily yield. Such are the several alkalies, magnesia, solution of lime and chalk. In what manner these acids act upon the stomach and bowels, perhaps cannot be satisfactorily answered. It is, however, most probable, that they exceedingly stimulate the alimentary canal, and, in conjunction with other causes, induce inflammation upon its internal coats. But what the chymical properties of these acids may be, is not as yet well understood.

It is not an object, in this essay, to contend for the doctrine of septic acid, or septon, which has been advanced by Dr. MITCHEL,* and is at this time adopted by many gentlemen of respectability. Whether the several circumstances of these disorders may, or may not, be satisfactorily explained by it, will be left for future investigation. The arguments adduced by Dr. M. in support of his doctrine, are maintained with much ingenuity and learning. They are worthy the attention of the speculative and practical philosopher, and deserve further consideration, inasmuch as many facts of the utmost importance are exhibited by him, by way of illustration.

That acids, however, of some species are generated in the stomach and intestines, and that they there become, if not a cause, the coadjutors of much pain and distress, is indisputably evident.

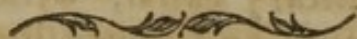
Seventh. Filth and dirt are supposed to be one cause of this disease. Under this article are included filthy habitations, dirty clothing, animal and vegetable substances in a state of decay. From the above sources, combined with heat and moisture, is formed an infectious state of atmosphere, which disposes the human body to disease. What the

* Medical Repository.

characteristic principles of these subtil materials are, which emanate from reservoirs of filth, elude our researches. It is probable they may not be dissimilar to those offensive agents, which are generated within the alimentary canal, from acetous and putrid fermentation. These principles of infection most probably always exist in the common atmosphere, but become active only when they are in a concentrated state. This is one reason, which may be offered, why the inhabitants of close settled cities, and populous towns, are more exposed to the scourges of disease, than those of thinly scattered villages. The fatal effects of an infectious atmosphere are already too well known, by the annual epidemics, which prevail in most of our large towns, to require a circumstantial detail. Infants, who are the most susceptible, are generally the first victims of its morbid influence. These offensive materials have been variously denominated, according to what has been supposed their nature and origin; from which, are obtained the names, *morbific effluvia*, *marsh miasmata*, *mephitic vapour*, *animalcule contagion*, *putrid fermentation*, *nitrous acid gas*, or *septon*. The materials of expiration and perspiration, when they are suffered to be accumulated, are real poisons. These also, in such states, form spheres of infectious principles around the bodies from which they originate. As the most mortal forms of disease are supposed to have their existence from these causes, it may be literally said of the animal system, even in a state of health, that it is a store house of infection.

If the preceding statements are just, *heat* will be considered as one remote cause of the autumnal evacuations of infants; *a torpor of the liver* induced by the excessive excitement of that active agent, as an intermediate cause; and *a superabundance of acids* in the alimentary canal, in consequence of a defect of gall, as an immediate or proximate cause.

When a disease is a chain of unnatural actions, we are at a loss to decide where the actions commence, and at what part they terminate. In catenated motions it is extremely difficult to determine a priority of action; on this account, where motions are not simultaneous, and where there is a general association, the preceding arrangement, of course, may be incorrect. A knowledge, notwithstanding, of the most general causes, however combined, with their general effects, however produced, will help to guide us in our further researches, and direct us in our applications to the existing forms of disease.



GENERAL TREATMENT.

1st. THE first indication, which presents itself in this disease, is to evacuate feculent matter, and other offending materials, from the alimentary canal, and correct acids therein abounding.

2d. The second indication is to allay inflammation and alleviate the other injuries, which the alimentary canal may have suffered from the several causes of the disease.

3d. The third indication is to promote a due secretion of bile, which is deficient in quantity, by removing obstructions from the biliary ducts, or restoring action to the liver; as it is presumed, a torpor of that viscus does exist, as a proximate cause of the disease.

4th. The fourth indication is to calm the violent commotions, and compose the irritated viscera, occasioned by the violent attack of the disease, or by the necessary employment of emetics and cathartics.

I. Our first indication is to evacuate feculent matter; this is effected by the employment of emetics and cathartics. Mild emetics and cathartics are to be preferred to drastic. For an emetic,

no one article of the *materia medica* is so eligible as *ippecacuanha*, as it produces its operation without debilitating the stomach, and irritating the delicate coats of the intestines, which is often experienced from the *antimonial emetics*.

For cathartics, are employed *calomel*, the principal to be relied upon ; *manna* ; some of the *neutral salts* have been recommended for this purpose ; those in particular which have for their basis pot-ash ; viz. *sulphite of pot-ash*, (vitriolated tartar) *tartrate of pot-ash* (soluble tartar) *acidulous tartrate of pot-ash*, (cream of tartar.) These alkaline salts are supposed to be decomposed by the acids, which predominate in the alimentary canal, while their alkaline bases seize on them, and neutralize them, and in this state are expelled from it.

But, for the intention of correcting acids, a weak solution of *carbonate of pot-ash* (vegetable fixed alkali) or *soda*, (marine alkali) should be repeated at intervals of two or three hours, according to the exigencies of the case. This dilute solution of alkali may be employed, during the operation of vomiting, whether excited by the disorder, or by art ; while the water, in which the *alkali* is dissolved, dilutes the offending materials, the *alkali* is employed in neutralizing the acids, and, by combining with them, prevents their ill effects. Alkalies remove the sensation of heat and burning, which often accompanies severe forms of this disease.

II. For the purpose of fulfilling our second intention, which is to allay inflammation, and alleviate the other injuries, which the alimentary canal may have suffered, from the several causes of the disease ; we employ mercurials. At first administer a full dose of *calomel* for a cathartic ; this not only purges away putrid colluvies, congestions, and acidities, but when there is an obstruction of the *ductus choledochus*, it may remove it. Here a repe-

tition of *calomel* is generally necessary, and with intention of absorbing new formed vessels, and removing inflammation from the coats of the intestines, it is to be administered in small doses, with or without opium, as the urgency of the symptoms require. *Calomel* has been long since employed to promote the secretion of the whole glandular system. Acute and chronic inflammations yield to the all pervading powder of mercurials. *Calomel* is more especially indicated in that form of disease, where a *tenesmus* accompanies a *diarrhæa*; in these cases, a repetition is most necessary, and when combined with opium, it seems to possess a specific property.

Secondly. We allay inflammation, and alleviate other injuries by means of mucilages. In violent forms of this disease, the mucus is separated, and cast off from the bowels by excessive action; great sensibility ensues, so that the softest substances are too harsh for their irritable condition. Here the vegetable mucilages are employed, with evident good effect. From among these, we select gum arabic, sem. lini. sweet elm, white wood, starch. Mucilages prepared from these, co-operate with more active remedies, to effect a removal of the complaint. It is necessary, sometimes, when there is great pain and violent tenesmus, to administer these mucilages with laudanum by way of enema.

Thirdly. To remove pain and inflammation, in the alimentary canal, blisters are used with much benefit; they appear to alleviate pain, by their counter stimulus.

Fourthly. The warm bath has been recommended to allay pain, and remove inflammation from the bowels; and from the immediate relief which it affords, we believe that it is of use.

III. Our third indication is to remove a torpor from the liver. This is to be effected, firstly, by

the employment of *calomel* in small doses ; to be repeated once in six, eight, or twelve hours. Secondly, by emetics of *ipécacuanha*. These may be usefully administered, in every stage of the disease. Their effects seem to arise from their mechanical operation. During the convulsive throes of the stomach, the liver is forcibly compressed by the abdominal muscles, the bile is expelled from the *vesicula fellea* ; or a larger secretion of it is produced. Does an increased torpor induced upon one viscus, remove a torpor from another, by indirect sympathy ? May this be a cause, why the liver secretes bile in large quantities, during the operation of an emetic ?*

IV. The last indication is to calm the violent commotions, and compose the irritated viscera, occasioned either by the violent attack of the dis-

* In the infancy of medicine, the only benefit to be expected from the employment of emetics, was the evacuation of morbid matter from the stomach. Modern discovery has, however, demonstrated, that their good effects are not so limited. We will here subjoin the sentiments of Doct. CULLEN, upon this subject, where he observes, that "vomiting excites the force of the circulation in every part of the body. And as there is a special consent between the stomach and the vessels of the surface, so that the several states of these are communicated to one another, the action of vomiting excites, particularly, the action of these vessels." He is further of opinion, "that the stagnation in the system of the vena portarum often lays the foundation of the most obstinate diseases ; and therefore the obviating these, by frequent vomiting, is likely to be of much importance to the health of the system." The Doctor adds, "I know of no means of expediting the circulation in the liver, so powerful as that of vomiting." And when mentioning the properties of *Ipecacuanha*, the Doctor is of opinion, "that no emetic is safer, or more proper, or more effectual for opening the obstructions of the biliary ducts, or for promoting the secretions of the liver.*" May not the antidyenteric virtue of this emetic be ascribed, rather to the action produced by it, upon this viscus, than to the cathartic operation, which is, (according to Dr. Cullen's supposition) promoted, having passed the pylorus into the intestines ?

* *Cullen's Materia Medica, chap. xix. Emetica.*

ease, or by the necessary employment of emetics and cathartics. For this purpose sedatives are used; the chief among these is opium. Æther may be sometimes beneficial.



PARTICULAR TREATMENT.

That we may the better apply our several indications to the particular cases which occur, and carry our curative plan, with more precision, into practice; it is thought to be expedient to divide these alvine diseases of infants into the more distinct forms, under which they usually appear, viz.

1st. Simple diarrhæa.

2d. Tenesmal diarrhæa.

3d. Violent vomiting, and purging, commonly denominated CHOLERA.

First. DIARRHÆA. Under this form the disease commences with a purging, accompanied with *anorexia*, and sometimes with a *nausea*; the dejections are frequent, light coloured, accompanied with flatus, gripes, but little or no fever; after some days, the discharges become brown, or greenish, accompanied with the mucus of the bowels, and with streaks of yellow, sometimes of blood.

MODUS MEDENDI. Administer, at first, a cathartic of *calomel*. Then, an emetic of *Ipecacuanha*. Two to four grains of *carbonate of pot-ash* (vegetable fixed alkali) every two or three hours, to neutralize acids. One to ten drops of *laudanum* at night. If the purging continues, repeat the emetic of *Ipecacuanha*; perhaps *calomel*. *Calcareous carbonate* (chalk lime) have been found to check the purgings in this mild form of the disease, sooner than the alkaline remedies.

More than forty patients have been treated with success this season by the above method, without

the loss of one. Many of the diseases were removed, after the administration of a cathartic of *calomel*, and an emetic, in two or three days with *chalk*. Some of the above cases had been of some weeks standing. The dose of chalk was five or six grains levigated, and intimately incorporated with water, and administered every three or four hours. When the gripes prevented sleep, a few drops of *laudanum* were added.

Second. TENESMAL DIARRHÆA. This form of the disease commenced generally with *nausea*, vomiting and purging. The fever and heat are great at first. There are much pain in the intestines, and gripes. The stools are copious and thin; their colour is light; very soon, they become small, dark, slimy, and streaked with blood. There is often an effort to stool, without any evacuation of fecal matter. The frequent inclination to stool, is caused by an irritation upon the inflamed lining of the *rectum*.

MODUS MEDENDI. Administer a full dose of *calomel* for a cathartic, to evacuate feculent and other offending materials; then, from one fourth of a grain to three grains of *calomel*, every sixth, eighth, or twelfth hour. Give *alkalies*, *lime water*, *magnesia* or *chalk* every two or three hours, during the continuance of the disease. The dose of *alkalies* is from one to four grains. The dose of *magnesia* and *chalk*, five or six grains. Next day, *ol. Ricini* for a cathartic; and repeat the *calomel*;* and the

* The use of *calomel*, in diseases of the intestines, is not a modern discovery. Doct. MILLER, in a communication to be found in the MEDICAL REPOSITORY, "recommends the trial of mercury alone, or combined with opium, as different states and exigencies of this disorder may require." He says, "as to the dose of this medicine, or the interval of repetition, it is difficult to speak with precision, considering the variety of circumstances, which must determine questions of this sort." The Doct. adds, "that from an eighth part of a grain, to one grain of *calomel*, combined with a portion of *opium*, from a twentieth part of a grain to half a grain, repeated every 2d, 4th, 6th, and

correctors of acids. When the disease continues, and appears obstinate, apply a blister upon the abdomen; warm baths. As soon as cathartics have thoroughly evacuated the bowels, join from one to ten drops of laudanum to the *calomel* at night; and oftener, if necessary to remove gripes. If, after inflammation and tenesmus are abated, an *anorexia*, or *nausea* continues, administer an emetic of *Ipecacuanha*, to excite the liver into action, and promote the secretion of bile.

Case 1. A child, six years of age, was seized with vomiting and large dejections, accompanied with much heat, and a quick and irritated action of the arterial system; very soon the stools became small, attended with extreme pain, gripes, and tenesmus.

8th hour, will comprise nearly all the range of variety necessary in the treatment of this disease. To be more particular—a child about two years old, may take a pill, composed of one sixth part of a grain of *opium*, and one third part of a grain of *calomel* every 2d, 4th or 6th hour, or sometimes oftener, according to the urgency of the symptoms. If much evacuation be wished, the above quantity of *calomel* is too small; if much astringency be desired, and the intestines be very irritable, it will be too large. And so also, *vice versa*, with respect to the *opium*."

We are of opinion, that the above medicine may, with more facility, be taken in the form of a powder, mixed with a little sirup, rather than in pills.

Doctor MILLER observes, "that the following advantages seem to attend the use of this medicine.

"1. The facility of exhibition. Neither article, when properly enveloped, is nauseating. The trouble of giving unpalatable remedies to children is experienced every day, and the trouble increases with the bulk.

"2. The difficulty of dislodging it from the stomach by the utmost violence of vomiting.

"3. By this combination, much more of each ingredient, active and powerful as they are, can be safely and advantageously given, than in a separate state.

"4. It is calculated to obviate the most fatal tendencies of the disease. When a fatal termination takes place, at any other than a very early period, there is ground of conjecture, that effusion in the head, or destruction of the organization of the stomach or bowels, commonly takes place. That mercury is well

1st Day. Six grains of calomel were administered for a cathartic. It operated freely ; no abatement of the disease was obtained by it.

2d Day. Two grains of *calomel*, every 8th hour. A solution of alkaline salts, grains two, with six grains of *magnesia* every two hours were administered. *Ol. Ricini* for a cathartic.

3d Day. The purgings continue, with violent gripes. *Calomel*, grains two, repeated every eighth hour ; *Manna* ζ 2, and *acidulous tartrate of pot-ash* ζ 2, (cream tartar) mixed and dissolved, and given in divided portions, for a cathartic. *Alkalies* and *magnesia* continued the same as yesterday. A blister upon the abdomen.

4th Day. Gripes and *tenesmus* somewhat abated. Dejections not so frequent. *Calomel*, grains two, every 8th hour. *Alkalies* and *magnesia* repeated. *Laudanum* drops ten, with the evening dose of *calomel*. Clysters of starch with *laudanum*.

5th Day. All complaints much alleviated. *Alkalies* and *magnesia* are continued as yesterday. *Laudanum* drops ten, at night.

adapted to prevent consequences such as these, will be readily agreed.

"5. Calomel, combined with opium, and especially exhibited in small doses, excites a strong absorbent action with respect to the fluids poured into the stomach and intestines. Most of the metallic salts possess more or less of the same power.

"Upon the whole," subjoins the Doctor, we think ourselves warranted in ascribing a superior efficacy to the action of mercury and opium, in the cholera of infants. The common mode of treatment appears comparatively superficial and palliative ; and of consequence, the effects of it are transient ; while mercury, penetrating to the inmost recesses of the disease, and disarming it of its malignity, effectuates a cure, at once radical, durable, and complete. Opiates alone, so generally used, and so much confided in, afford only a short-lived, delusive repose, in this tumult of the system."

Those who have a wish to read more of the very valuable communication, from which the above extracts were selected, will find it in the 63d page of the 1st vol. of the Medical Repository.

6th Day. The patient is much better. But there is no return of appetite for nutriment. There is evidently a deficiency of bile, from the appearances of the evacuations, they being white and slimy. *Ipecacuanha* grains ten for an emetic.

7th Day. There is no fever nor pain. The stools somewhat yellow. *Alkalies* and *magnesia* are continued. The *emetic* is repeated.

8th Day. Some appetite. Nutriment adapted to the state of the stomach and bowels is directed. From this period, the patient recovered rapidly. The principal nutriment allowed were gruels of biscuit, and meal, rice and barley drinks, and diluted cream.

Third. Violent vomiting and purging, or what is commonly called CHOLERA.

When the disease commences its attack under this form, no time is to be lost. Emetics and cathartics are seldom necessary. The patient soon sinks under excessive evacuations, accompanied with pain from inflammation. Where the pulse is sufficiently strong, it is adviseable to bleed, in small quantities, to obviate indirect debility. The difficulty we experience in bleeding infants has often prevented its employment.

MODUS MEDENDI. Administer a dilute solution of *alkali*, and repeat it, as often as it is rejected. If vomiting continues, add to the alkalies from one to ten drops of *laudanum*. When there is a great exhaustion of strength, and evacuations continue, the danger is extreme. If *laudanum* will not stay upon the stomach, embrocate the stomach with the strongest *laudanum*, and at the same time apply a *blister* upon the back. Administer clysters, with *laudanum*. Where there is an inverted motion of the whole alimentary canal, and the faecal materials are vomited, apply assiduously the *laudanum*. Blister the back and extremities. Inject clysters of cold water. Smear the skin all over with oil.

The two last articles are recommended by Doctor DARWIN*. In this last form of the disease, indirect debility suddenly follows excessive inflammation.

Case 1. A child, six months old, was seized with violent vomiting and purging, which continued until the third day, when it was found very low, the pulse quick, and scarcely to be felt; a coldness had generally supervened. The thirst is not to be satisfied; every fluid received into the stomach is ejected. *Laudanum* is applied to the abdomen; a blister upon the back; drinks are prohibited until vomiting might cease. As soon as the blister began to inflame, the stomach became calm. Then cream diluted with water, was given for its only nutriment, to which was added, as a neutralizer of acids, chalk finely levigated, grains 6, and repeated every three hours. Fifteen drops of *elixir paragoric* was administered in the evening. A continuance of chalk, with nutriment suitable to the strength and age of the patient, completely restored the child in a few days.

Case 2. A child, eighteen months old, was attacked with vomiting and purging to an excess; upon the fifth day of the disease, being called to advise, the patient was found sunk; the pulse intermittent, and extremities cold. *Laudanum* was applied to the stomach and bowels; a blister upon the back; as all liquids, which had been received, had been immediately rejected, they were prohibited till vomiting should cease; as soon as the blister began to irritate, the stomach became calm; two grains of *carbonate of pot-ash*, (alkaline salts) were directed to be administered every two hours; the purging soon abated; nutriment in small quantities was allowed. Alkalies continued until restoration.

Case 3. A child, two years old, was taken down with a vomiting and purging, accompanied with

* Zoonomia, chap. i. 3. 1. 6.

great heat, and strong action of the arterial system; a delirium had supervened. Five grains of calomel were directed for a cathartic. Two grains of *carbonate of pot-ash*, and five grains of *magnesia*, every two hours.

2d Day. The febrile heat is less; vomiting has ceased; purging continues every five minutes; the dejections are greenish, mixed with the mucus of the bowels, and are passed involuntarily; the delirium continues. Two grains of *calomel* are directed every eighth hour; in the evening, one sixth of a grain of *opium*, added to the *calomel*. Alkalies and *magnesia* are continued every two hours.

3d Day. Purging is not so frequent. Two grains of calomel every 8th hour, and at night one sixth of a grain of *opium* is added to the calomel. *Alkalies* and *magnesia* continued.

4th Day. Purging is not so frequent. Fever less. *Manna* \bar{z} j. and *acidulous tartrate of pot-ash*, are administered in divided portions for a cathartic. *Alkalies* and *magnesia* are continued.

5th Day. Three dejections only, the last twelve hours; calomel 2 grains, and one sixth of a grain of opium at night; six grains of chalk, directed every three hours.

6th Day. No fever. Purging ceased. Five grains of *Ipecacuanha* for an emetic, to promote the secretion of bile. Chalk continued.

7th Day. Food is called for; nutriment of diluted cream, weak broth, beef tea, is directed. The patient soon recovered.

The success which has attended the preceding method of practice, authorises us to recommend it to further attention. Of more than one hundred, who have been seized with the forementioned disease, under its several forms, and have been subjected to the above methods of cure, during the present and preceding seasons, only one has died; and this was a child of two years of age. It continued

after the first attack only twelve hours. It had been under the operation of violent vomiting and purging nine hours, previous to the calling of medical advice, when there were a feeble and intermittent pulse, a great prostration of strength, and a receding of heat from the extremities; in fact, death was depicted on its countenance. Alkalies were here administered, with opium, and blisters applied; the vomiting immediately ceased; but, it is supposed, more on account of a total exhaustion of excitability, than from any beneficial effects of the medicine.

We now acknowledge, that the employment of alkalies, in these complaints of children, was at first adopted in consequence of well authenticated accounts of their successful use, in similar diseases. Several communications of their beneficial effects, are to be found in the Medical Repository. It is well known, that Dr. MITCHILL is the author of this alkaline practice. The advocates of it are not a few, nor do they want respectability. *Alkalies*, neutralized with acids, have a long time since been employed as *antiemetics*; their salutary effects, as such, have been universally acknowledged, by their general employment, without its being thoroughly understood upon what principles they have acted, within the alimentary canal. But, if these complaints originate from acids, as their proximate cause, or if they are only a concomitant casualty of the disease, we shall no longer be unable to account for the beneficial operation of alkaline remedies, nor their compounds, in these disorders.

We have, in some instances of the severe and violent forms of this disease, where there were inflammations and tenesmus, administered calomel, so as to excite a gentle *Ptyalism*, and soreness of the mouth, with good effect.

Among the various remedies, which have been employed in the cure of these diseases of the ali-

mentary canal, and which have obtained considerable reputation, is the *sulphate* of *Zinc*, (vitriol of Zinc); and we are convinced, from our own experience, that it is not an ineffectual medicine. Next to *Ipecacuanha*, it is the mildest and safest emetic, with which we are acquainted; and, when it is administered in small doses, and frequently, it proves gently cathartic. In addition to the above sensible effects, when it is administered in still smaller doses, it seems to remove inflammation from the intestines, and consequently allay tenesmal complaints, upon the same principle, by which it cures *ophthalmia*.

In some forms of this disease, we have experienced considerable benefit from the *saccharum saturni*; in one instance, particularly, where after there had been a long continuance of purging, the evacuations suddenly changed from a common diarrhæa, with fecal discharges, to one of pure blood. As these last evacuations were unaccompanied with pain, we presume that the blood discharged proceeded immediately from the liver; which in consequence of its torpor permitted this fluid to pass, unchanged by the secretory organs, through its vessels, as if they had been inactive tubes. In this case, *sac. Saturn.* 2 grains, with 1 grain of *opium*, were administered, and repeated at the expiration of eight hours. The purgings immediately ceased altogether; when two or three emetics of *Ipecacuanha* were given to excite the liver into action; after which, by means of the bark and wine, with a soft nutritious regimen, a speedy restoration was obtained.

In the course of our practice, we have met with four other cases, where pure blood was discharged from the alimentary canal of adults in large quantities, unaccompanied with pain; and from the several circumstances attending the discharges, we

believe that they proceeded from the liver. Two of these cases were of *jaundice*. One was that of an inebriate. A sudden attack of palsy, immediately after a fit of intoxication, the patient having lost his reason, was succeeded by vomiting, and purging of blood, which continued twenty-four hours, when by the employment of *calomel* and *Ipecacuanha*, the person was restored to reason and health, after a few days.

The second case was that of jaundice, from an obstruction in the *ductus choledochus* from *calculus*, which had been of twelve months standing. This patient had suffered extreme pain; and from a very full habit of body was reduced to a mere skeleton. To procure any respite from distress, opium in large quantities was resorted to. In this situation, almost upon the confines of the grave, a sudden vomiting of pure blood supervened, which was followed with large dejections of the same. From this moment, the extreme pain in the pit of the stomach, was no more felt; the intestinal discharges soon became regular, the appetite returned, and the person unexpectedly, in a short time recovered health. The above cases of bloody evacuations, we have no doubt, were caused by a torpid condition of the liver, and the discharges immediately proceeded from that viscus, through the biliary ducts, into the duodenum.

To enumerate the catalogue of medicines, in common use, for these complaints of the alimentary canal, among the inhabitants of the country, would be to fill up a volume with absurdities and contradictions. Most of these belong to the classes of bitters and astringents. Upon these, we are convinced, from our experience, that no dependence can be placed. Bitters and astringents never should be administered, until the disease is entirely removed; for, so long as there are remains of inflammation upon the internal coats of the alimentary canal, these articles seem only to augment

it; they increase the discharges, with pain, rather than allay them.

However, during a state of convalescence, we have, after the purgings have entirely ceased, experienced much benefit from the use of the *bark*, *columbo root*, *marsh root*, and *blood root*, especially where there appeared to be a want of appetite and digestion.

We have removed a chronic *diarrhœa* of some months standing, by means of a woolen waistcoat, closely laced about the abdomen, in a few days, after all other means had failed; perhaps it cured the disease, upon the same principle, that the spiral bandage cures swelled legs, by promoting absorption.

PREVENTIVE MEANS.

THE future health of the body much depends upon its original stamina. An infant brings into the world with it, a system formed by nature to resist those agents which produce diseases, or remove disorders with which it may be attacked, provided it has not imbibed from its parents a morbid taint.

The deplorable mortality, which prevails among infants, too plainly evinces, that their health has never been sufficiently attended to. But, so long as gentlemen of science are totally excluded from the concerns of the nursery, or they esteem them an employment without the province of their profession; and the management of children is entirely left in the hands of inexperienced nurses, who are ignorant of the most obvious principles which constitute sound organized life; who are always governed by ancient customs, however absurd, and are strongly prejudiced in the prevailing fashions, however improper; we need not wonder, that so many are taken off, during the period of infancy; we admire, that so many survive

the dangers, through which they have to pass, during childhood, and arrive at adult age.

Nothing is more common, than for nurses to administer to an infant, as soon as it is born, some drug of a purgative quality; as if disease is necessarily connected with its new formed organs; and from a preposterous notion, that the contents of the bowels, if retained, would immediately occasion disease, if not death. The absurdity of this practice must be obvious, when it is considered, that nature has duly provided the means, in the milk of its mother, by which the bowels do regularly perform their office, where art does not interfere. The stomach, from the unnatural stimulus of cathartic medicines, becomes debilitated and nauseated; the intestines are relaxed, and suffer pains and gripes; a general uneasiness, if not convulsions follow. Should the patient survive the operation of the medicine, a costiveness ensues, which calls, as is supposed, for a repetition of the same, or similar means to keep the bowels in motion. During the continuation of this forced process, the health of the infant is impaired, and it probably expires under a management, unwise as it is insalutary. The fatal catastrophe is imputed, not to a want of proper conduct, nor to an unfit administration; but, either to an original defect of the constitution, or a positive decree of Deity. But should the unfortunate infant outlive the long catalogue of abuses it has to endure, while in the hands of its nurse; yet it is reserved only for future ill-management; while a successive train of pains, distress and disease closely pursue; always predisposed, from early irregularity, to sensibly feel the effects of every blast of air, and to suffer from every change of temperature, or constitution of atmosphere, it is become a mere living thermometer. Its tender and diseased frame is observed to be extremely liable to be affected, during the revolution of the seasons; either from

hot to cold, or from cold to hot. Such is the order of infirm life, at the present day, established more by custom and habit, than by an hereditary conformation.

It is the business of art to prevent the continuance of a practice productive of so baneful evils, the source of ignorance, and oftentimes of obstinacy; and counteract the disposition to disorders, a consequence of them. To complete this last intention, as nearly as the frail materials of which the human system is composed will admit, we shall conclude this dissertation upon the diseases of children, to which they, from a delicate organization, are peculiarly subjected, by recommending the following means of preventing them; some of which have been found by experience to be of great benefit.

1st. The extreme heat of summer and autumn, as it is supposed to be a predisposing cause of these diseases, should be guarded against; by not permitting children to expose themselves to the perpendicular rays of the sun, during the hot season, without a suitable covering over their heads. When they are without doors, during the heat of the day, they should be confined under the covert of wide spreading shades. The debilitating effects of the piercing rays of the sun, we all are sensible of, from experience; not to mention the extreme danger, which follows on exposure to them, in consequence of their excessive excitement upon the brain. Instances of immediate death are not wanting to deter from practices so hazardous.

2d. In the place of feather beds, children should, from the moment of birth, be accustomed to mattresses of hair, cotton, oat chaff, husks of indian corn, wheat bran, or rushes; more especially during the heat of summer. Beds of feathers are productive of much mischief, by increasing the heat of

the body, during the hot season, already too great. The matter of perspiration is retained about it, by their means, and the tender skin suffers from its accumulation. From the poisonous properties of this material, frequently originate diseases of the *cutis*, to which infants are peculiarly liable. It is very observable that disorders of the bowels often alternate with diseases of the skin.

3d. The effects of extreme heat upon the human constitution may, in some measure, be counteracted by the employment of tepid baths. In proportion as the sensorial power is diminished, by warm bathing, so will the danger from excessive stimuli be lessened. The cold bath, which is indiscriminately recommended by some, during the hot season, has an opposite effect; it accumulates the sensorial power, and thereby increases the danger from the action of excessive stimuli. During the exhaustion of excitability, from disease, the cold bath employed with discretion may be useful. A very determinate method, and accessible to all, to prove the effects of the warm and cold baths upon the body, is to observe the sensations occasioned by them; upon leaving the cold bath, in a hot day, an uncomfortable glow, with a dry skin, ensues; in fact, a temporary fever is produced; while an opposite sensation is experienced, which is cool and pleasant, upon quitting the warm bath. In addition to the agreeable sensations produced by bathing, a necessary cleansing from filth and dirt, and opening of the cuticular pores of the body naturally follow.

4th. The clothing of children should be accommodated to the sudden variations of the weather. These changes are supposed to have influence upon the human system, so as to be in some manner instrumental in producing diseases. It is as injurious to expose their tender frames to a colder state of atmosphere, as it is to swaddle them up in a multitude of garments, during the extreme heat of summer.

The body is always more affected by relative cold, than by positive. The clothing of children should be so constructed, that it may fit easy to the body, and not put the limbs under any restraint; it should be so loose during the heat of summer, as to allow a free circulation of air around the body, by means of which it may be kept in as temperate a condition, as the state of the air will permit. Indeed, loose hanging robes act as ventilators to cool the body, too much irritated with heat.

5th. The next article which engages our attention, as a preventive of these diseases, is cleanliness; a rigid regard to this cannot be too frequently enforced. "This domestic virtue ought to extend its influence to every object connected with the human frame." Filthy bed clothes and apparel are all replete with matter of perspiration, and consequently incapable of absorbing more. When they come into contact with the body, in this condition, the skin re-imbibes the materials already perspired, and returns them into the circulation, by the absorbents. On this account the frequent change of clothes is of the utmost importance. The filth, which naturally transpires from the body, if suffered to accumulate around it, must have much influence upon it. Too often, through unpardonable negligence, during the period of infancy and childhood, the body becomes enervated, the skin dry and rigid, in consequence of dirt. A disposition to disease exists for want of a due perspiration; heat, fever, purging and emaciation follow. The office of the *cutis* is important, in the economy of life, little observed, and less understood, by the generality of mankind. It is the organ of the most extensive and useful sense, that of feeling; from which circumstance it is, that physicians so frequently hear of uneasy sensations, and restless nights, occasioned only by the retention of the matter of perspiration about the body. So

sensible was that celebrated philosopher, Doctor FRANKLIN, of the disagreeable effects of a retention of the matter of perspiration upon himself, that if, at any time, he found himself restless in his bed, he would rise from it, open the clothes, and give them a thorough ventilation; after which, he never failed to sleep quiet and sound, and after waking, found himself always refreshed. It is by means of the skin, that nature is employed to expel from our bodies materials which are unfit for its organization; and while it separates and evaporates noxious particles, it absorbs, through its exquisitely formed constructure, those which are fraught with the principles of life.

Doctor RUSH very justly observes, that cleanliness, during infancy, is a physical mean, not only of promoting health, but virtue; "the first rudiments of which," he adds, "ought to be disseminated in childhood."

A cheerfulness is always observed in children, after washing, and the application of clean linen. Peevishness yields to the same means. Anger is assuaged by purifications of the body; and, by ablutions, the boisterous passions become pacific. The greater susceptibility to every kind of stimulus, which infancy possesses, is a cause, why children are more subjected to disorders of their bodies, which arise from filth and dirt, than adults.

6th. Another mean to be offered, to prevent these disorders, to which children are liable, is to remove a costive state of the intestinal canal, which generally precedes these complaints. A well timed cathartic will often obviate a violent disease, by removing accumulated congestions, and superabundant acids. By soliciting the motion of the bowels, the liver, at the same time, is excited to a performance of its office.

7th. An occasional emetic of *ipécacuanha*, where there is an *anorexia*, and *nausea*, which often accom-

panies a predisposition to the diseases of the alimentary canal, has a favourable and a very salutary effect. Emetics excite the viscera into action, and thereby remove a prevailing torpor, and in a particular manner promote the secretion of the bile, which has been demonstrated to be of so much use in the alimentary canal, as a natural cathartic, and a corrector of acids, and a resister of putrefaction.

8th. Moderate exercise may be usefully employed to ward off a predisposition which threatens attacks from disease, by promoting the general secretions and excretions of the body. Man was created an active being, and is formed for useful employment. Nothing conduces more to health, than exercise. A child should be early accustomed to the use of its limbs. Muscular motion strengthens the powers of the body, and at the same time invigorates the energies of the mind. It expands the chest, whereby respiration is rendered free and uninterrupted; and the complaints, to which the lungs are exposed, particularly obviated. Exercise upon horseback, or in a carriage, should be undertaken in cool, and temperate weather; it will often remove the habitual costiveness of children, and when it does answer the above intention, it is to be preferred to the offensive and stimulating operation of cathartics. A gentleman in easy circumstances, within our knowledge, when he is desirous to move the bowels of his children, always gives them an airing on horse, or in a carriage, which never fails to produce the desired effect.

9th. A proper attention to diet. No one article is of more importance to health, than a regular dietetic management of children. It has been a matter of controversy, among scientific men, whether animal food ought ever to be allowed children, in their infant state. All changes should take place in a very gradual way; after the period

of dentition is passed, to introduce them to the use of animal food, is certainly proper; at first they should be restricted to small quantities, and after some time, should be indulged in more. The principal part of their diet, however, should consist of milk, and the *farinacea*. Milk is easily assimilated to the component principles of the animal machine, it expands and favours the evolution of the vessels, it neutralizes acids, and obviates their irritating effects. The *farinacea*, as containing more oil, are not so disposed to run into acetous fermentation, as other vegetables and roots. They are likewise more nutritious; for these reasons are suitable for the diet of children. A milk diet should never be superseded by the fashionable fops of tea and coffee, too commonly in use.

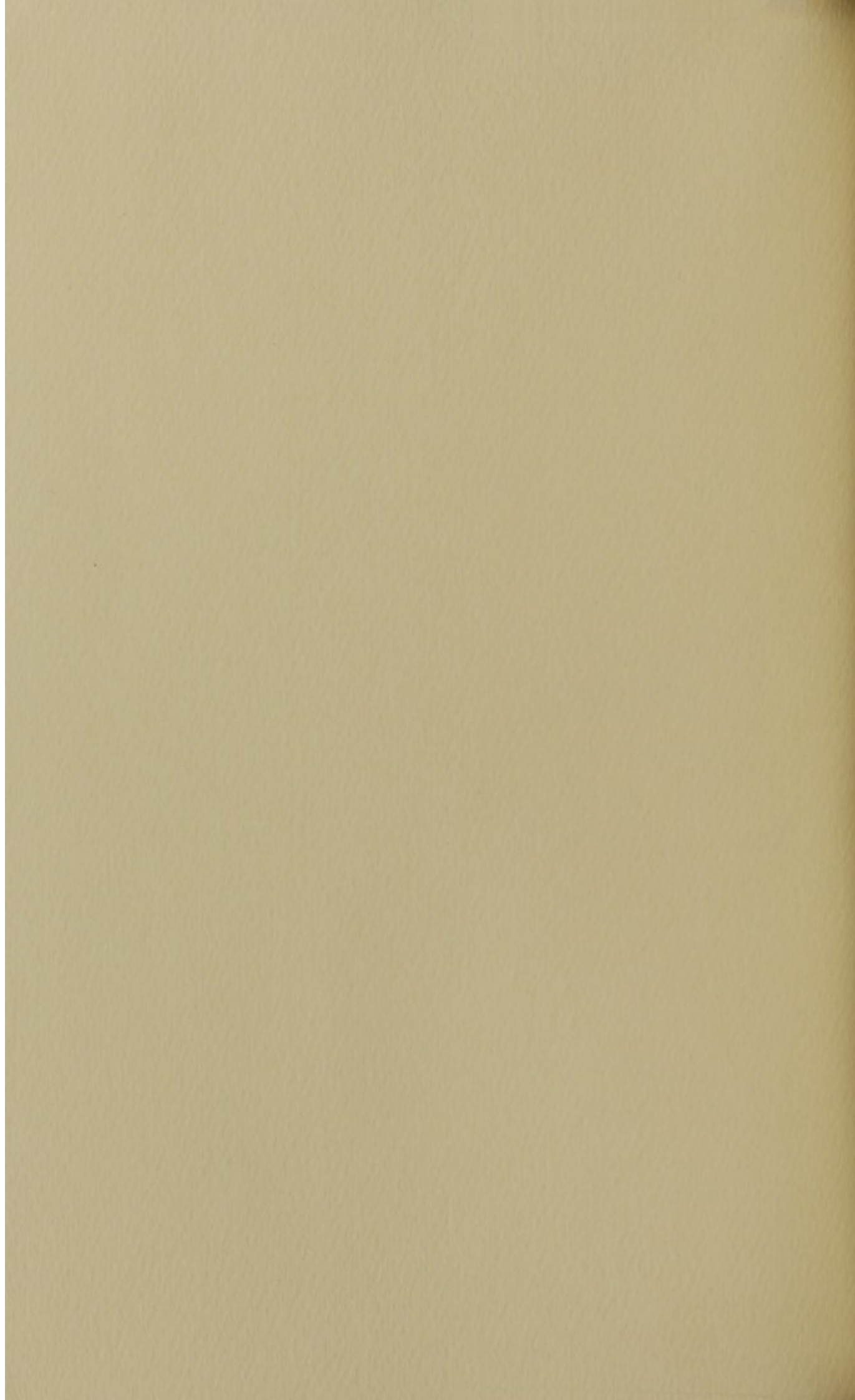
Wine and ardent spirits should absolutely be prohibited children. The first of these articles is disposed to acetous fermentation; while the excitement, already high, is increased by the employment of the last. By their use, the powers of the stomach are weakened, digestion is impaired, and a catalogue of evils follow. An habit is induced, by drinking vinous and ardent spirits, which is seldom eradicated; every species of immorality always accompanies the inebriate to his grave. How necessary then to abstain from an early indulgence in these intoxicating articles, which are almost universally acknowledged to be of the most dangerous consequences to society. No beverage is more grateful, or more desired by children, who have not had their appetites vitiated, than cold water. It diminishes the excitement occasioned by unavoidable stimulants. It lessens the irritation of the body, by absorbing its superabundant heat. It dilutes the aliment, which is received into the stomach, and prepares it for the formation of pure bland chyle. It keeps up an equable perspiration, and modifies the other excretions and secretions

of the animal system. "It is a vulgar prejudice, that water disagrees with many constitutions." It is preferable to distilled and fermented liquors, both for invigorating the digestive powers, and for diluting acids and offending stimulants, which in a concentrated state injure the stomach.

When was it first discovered, that for allaying thirst, human art ought to supersede that simple and plain article of drink, which the God of nature has so bountifully prepared, and wonderfully stored up, in inexhaustible reservoirs, for the use of mankind?

But of what avail are rules and regulations? Those which are already interspersed among the writings already extant, are but little regarded. The present generation probably will pass away, as heedless and indifferent to things which respect the economy of life, as the preceding. An habitual indolence is observed in every thing connected with health. The appetite is the ruling passion of childhood and youth. By indulgence it becomes inordinate, while by habit it becomes ungovernable. A conquest over a single irregularity or mismanagement, is a victory of no small consequence, inasmuch as it may weaken prejudices, which are the basis of many others, more or less connected with them.

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